The Builder.

VOL. XIII.—No. 668.

THE sanitary movement seems to be entering into a new phasis of its development. Last year we heard of little but tubular drainage; and furiously enough the battle raged. There was the Croydon case, in which, to judge by the adverse reports, the whole system had broken down in a crash of ruin and failure. The sanitary leaders, however, rallied their forces, showing that while a few local blunders and consequent stoppages, easily curable, and easily preventible for the future, had been exaggerated into proof of failure, the Croydon pipe drainage was all the while quietly doing its work; and that so efficiently, as to bring on the Local Board more applications for house connections than they could satisfy at once; so that while the system was being trumpetted as a failure, parties were actually paying to be taken out of their turn to have their drains laid on to it.

Nevertheless, an impression against pipe-drainage was made on the public mind; and this served to enhance the suddenness and force of the re-action when Mr. Ward wrote his often-quoted letter in defence of pipe drainage, on the receipt of which letter, transmitted by Lord Palmerston, the Metropolitan Commissioners of Sewers protested by a resignation *en masse* against the espousal of these views by the Government.

Lord Palmerston appointed the writer a commissioner in the Board which succeeded, naming as his colleagues three gentlemen known to hold the same views, and (probably by way of a constitutional opposition) retaining also on the new Board the chairman and four members of the old one. These, so to speak, were the hostile armies drawn up in battle array; and the parishes nominated eight Commissioners, equally indifferent to either view, and forming a species of jury to watch the contest, and give their verdict on the side on which, in their opinion, the balance of right reason and sound economy might incline. Soon after the opening of the Commission, the advocates of pipe-drainage set forth their views on the policy which, according to them, should be pursued; and from the first this seems to have obtained the support of a majority on the main points in debate. In order to settle the pipe question, the Commissioners ordered a thorough investigation: hundreds of pipes were dug down upon and examined, including those previously reported as failures by Mr. Bazalgette, and the results, it is affirmed, proved the successful working of the pipe principle.

So very different are the two reports on the same examples, that it is scarcely possible, notwithstanding explanations given since, to view both as honest documents. There appears to be extreme difficulty in obtaining information on the subject that can be relied on. Even with personal inquiries in some of the towns drained either partly or wholly on the pipe principle, we have found it impossible to arrive at a satisfactory conclusion, so contradictory were the opinions expressed. The success of the tubular system would seem now, however, to be generally admitted, due care and judgment being employed.

The pipe battle then being fought out, Mr. Ward proceeded to settle the question as to the combined back drainage of private houses; with which view, finding the powers of the Sewers Act inadequate, he procured the passing of the House Drainage Act, to which we adverted in a recent number of this journal, and which was carried in spite of the strenuous opposition of the other Commissioners. This Act, after many delays, has been got into successful operation; large numbers of groups of houses being now in course of drainage on the new plan, with a degree of economy sufficiently proved by the fact, that cases with which it was found too costly to deal on the separate front drainage system previously in vogue, have been efficiently treated on the combined plan of drainage, under the new Act. The numerous models of combined works thus scattered through the town will, we have no doubt, bring about the complete overthrow of the old prejudices still surviving in some quarters against the combined principle, which, on the most moderate estimate, reduces the expense of house-drainage to half, often to a third, and sometimes even to a fourth, of the cost on the old mode. For a time, however, there will of course be difficulties, and individuals, rather than run the risk of suffering through the carelessness of a neighbour, will be found to protest against it.

Thus much having been accomplished, the same Commissioner, with a tenacity to which different parties of course give different names, has, within the last few weeks, transported the battle on to new ground,—supporting the Small Tunnel system in opposition to the scheme of Big Tunnels put forth by the opposite party; and declaring small tunnels to be "the logical consequence of small tubes." He proposes a reduction of more than fifty per cent. on the sectional area of the main outfalls, and an equivalent diminution, amounting to three-quarters of a million sterling, in their cost. This is for the north side only; on the south side it is considered that an economy of still larger relative amount may be effected.

Opposed to this view are Sir W. Cubitt, Mr. Stephenson, Mr. Hawksley, Mr. Bazalgette, and their engineering friends,—who maintain the old formulæ in respect of tunnels as they maintained them in respect of brick sewers. To these formulæ Mr. Ward opposes the practical experience of Mr. Roe, who passed twenty years in periodically measuring the flow of the Fleet sewer, at various points along its course, from Hampstead down to the City boundary; and whose table of sizes, published in 1852, assigns for the larger sewers nine times the amount of town area which, by Hawksley's tables, published in 1845, each size respectively was set forth as capable of draining. Mr. Roe, it appears, has put in a plan of small intercepting tunnels, in conformity with his tables, and in opposition to the tunnels of double capacity and cost designed by Messrs. Stephenson, Cubitt, and Bazalgette. Mr. Ward charges these gentlemen, in terms to which their courtesy lends a poignancy, with having resorted to unfair modes of calculation for the purpose of defeating Mr. Roe, and proving his tunnels too small.

The Commissioners of Sewers have voted against the continuance of the debate; a vote, however, which can hardly settle the question, considering the large money interests depending on the issue raised; a vote, indeed, which the minority met by a written protest against a decision, in their judgment, so premature. Mr. Ward has replied at considerable length to a coarsely worded letter (let the merits of the case be what they may) published by Mr. Bidder, and shows what certainly looks like a misquotation by Mr. Stephenson of the flood area and slope of Mr. Bazalgette's high-level sewer,—a misquotation described by Mr. Bidder as only "an apparent discrepancy," but which his opponent maintains is a real one. Mr. Stephenson's words are,—

"The high-level sewer (as already explained) must act as a drainage sewer for seven square miles, and remove the sewage, and a portion of the storm-waters, from another seven square miles, estimated at about 45,000 cubic feet per minute. The lower portion of the sewer, designed for this purpose, would discharge 47,000 cubic feet per minute, being 12 feet 6 in. in diameter, with a fall of 1 in 600."

"Can a fall of 1 in 600 be more plainly affirmed than here?" asks Mr. Ward. "Can such language be fairly construed to imply a fall of 1 in 1,359, brought up to an equality with 1 in 600 by working the sewer under pressure, so that the sewage, accumulating in the tunnel above, would, by its hydraulic head, force a passage below?" Most persons would probably say no; but we do not propose to go into the controversy. The real point at issue is, must we have the tunnels of large size proposed by Mr. Bazalgette, or would the arrangement proposed by Mr. Roe, with a saving of three-fourths of a million sterling, on the north side of the river only, serve efficiently? Reserving our opinion, we must confess that we have more faith in Mr. Roe than in the engineer of the present Commission; and notwithstanding the evil of delay, we must earnestly exhort the new Board not to proceed with the scheme without further investigation.

THE COMING ARCHITECTURAL EXHIBITION.

WE know not that there is any necessity for adding to what has been so often said in our pages, as to the ensuing ARCHITECTURAL EXHIBITION. We are not disposed to recognise the possibility of any mere half-success, like that of last year. But, as it need hardly be said, architects do not unfrequently show themselves quite apathetic where their interests are at stake; so that some of our readers this week must even bear with what, from us, is really a "twice-told tale."

On the 3rd and 4th of next month drawings are to be received at the Suffolk-street Galleries, and we take leave to say that every architect in the United Kingdom who sets a proper value upon his art and upon his own *personal* interest, will be prepared to contribute, or to satisfy himself that he has good reason not to do so. No one can *afford* to be at all careless in this matter. With the utmost respect for the older members of the profession, we urge upon them that they are not exempt from the duty of *maintaining* a position, or the alternative which there is in all professions of being supplanted. To the young, we say, that the opportunities that an exhibition affords are the most valuable which are open to them. We see no reason why the Architectural Exhibition should not be made to supply all that can be got out of architects' competitions—with their degrading influence upon the profession, their sacrifice of much that is important to the result in art, and their confessed failure as to the attracting men of established reputations, which it is of course one of their objects to do. The main excuse for the numerous responses to any sort of offer, has been that "competing" was a means of education in the preparation of designs. The question is whether similar advantages along with others, might not be made to accrue from other sources. We know of several positive instances in which professional employment and *status* have come from the exhibitions that have already taken place—moderately successful as these have been. We may remark, that the Architectural Association has already done good service by its class of design, and might, we think, easily give all the advantages as to study, by the occasional choice of subjects of greater importance and magnitude, in connection with particular sites of ground. Committees will perhaps one day, begin to doubt whether their interests are served by the present system of architects' competitions.

But we should take a very limited view of the benefits to be effected through the Architectural Exhibition, were we to say that these are such as the young members of the profession mostly, are concerned with. Further, we have all a higher personal interest than in what appears immediate and personal. It is for the interest of the profession that the public

eye should be enamoured of architectural art. It is for the interest of every architect that each one should be aware of what is being done by others.

Public interest in the art, and the position of the profession would be served by somewhat greater unanimity amongst architects, on many questions, than is at present found. Again, the ideas of the most fertile imagination, left to themselves, are soon run out, and at any time are of little worth without constant correction from comparison with the ideas of others. The gain to each is immense, the individual contribution quite insignificant. How often are the following words quoted:—"The greatest natural genius cannot subsist on its own stock. He who resolves never to ransack any mind but his own, will be soon reduced from mere barrenness to the poorest of all imitation; he will be obliged to imitate himself, and to repeat what he has before often repeated." At the same time it should be understood, that there is a right and a wrong way of using a collection of architects' designs. There is much talk about the discreditable practice of *copyism*,—the allusion being to the use of old models. There should be the same feeling as to the manner of using the advantages of the Architectural Exhibition, or it will be vain to expect that men of particular ability will contribute, merely to supply forms for others. Whether "sketching" in the rooms is to be allowed or otherwise, is not so much the question. We want both the feeling of honour, and the sense of what is due for *art*,—which together, allowing all that might be good and original in designs to be perceived and remembered, would require that every fresh design should not be traceable to an original. In short, though it may seem paradoxical, one use of an old model or a new design, should be to show the means of avoiding a copy of it.—We have learnt that there are architects, without whose works the exhibition could not be said to give an accurate reflection of the state of architecture in England, who have hitherto taken a view of the results from exhibiting, as regards their designs, which view has prevented their sending drawings in previous years. In the cases we refer to, it would be absurd to say, as we might in ordinary cases, that where persons are miserly of their ideas, they have usually few that are worth having. We simply know that nothing of this sort could be applicable. But, that there is some foundation for the view taken by these architects, we fear is too true. There are architects, both in London and the country, whose misfortune it is to be copied and re-copied,—with, of course, a falling-off at every stage. Sometimes, it is only a characteristic detail that is set up on the opposite side of a road: sometimes the general manner is caricatured: sometimes a whole house is "taken off" bodily as it were, and built afresh. And the speculative builders are not the only delinquents. Thus the original designer gets disgusted with what was at first his own work; and the result generally is like that which has been arrived at by the use of the Greek details, and which is probably approaching as to the Italian window-dressings: that is to say, the greatest beauty in forms degenerates to the greatest ugliness; and members are applied under un-artist-like combinations, until a whole style is abandoned in unreasoning disgust, for the sake of another, perhaps less copious, though more *bizarre*, and of which the new lesson has to be learned through years of misconception and failure, only at length in its turn to be abandoned. Now, if the Architectural Exhibition is to become a national institution, and to realise all that we believe it is capable of, and indeed that which we cannot obtain otherwise, it is essential that all architects should take a proper view of it, in certain points. With little individual effort, the collection may be such as to induce repeated visits, and to afford what could hardly be gained by individuals during many years of study. There should, therefore, be no mean desire to escape contributing whatever ideas each one may have. But it is essential that there should be both the honourable feeling, and apprehension of the proper use of suggestions, which may allow their influence to be exerted without a result in any way approaching to copyism. There are some leading builders, we may say, who require a little ventilation of their opinions on the moral obligation which there is—of copyright.

Individuals such as we have referred to, will, we trust, under any circumstances, on this occasion, throw aside every feeling but that of doing their part to contribute to an exact reflection of the state of art amongst us. We shall never advance as we should, unless we know more clearly where we are. *We* should not hesitate to show that there is no profession which suffers so much as ours does, by isolation of practice and study amongst its members; or which is so little exempt from the ordinary laws of progress, as regards the necessity of interchange of ideas. It may be well to point to the Institute, and to many advantages which the architect of the present day has:—we say, that even these are incomplete and partial in their effects on art, unless there be added an annual exhibition. No one can have visited an exhibition of competition designs without feeling the full force of what we say, and of what we have indeed often before expressed.

As regards the existing state of art, it is exceedingly difficult at present to form a definite opinion. The collection of works sent to the French Exhibition was incomplete in this respect. The committee of architects, doubtless, did their best with the works presented to them; but it is beyond question that blunt refusals had been sent, by some one in authority, to offers of works of high merit which would be essential to a view of the state of architecture in England.

Whilst in one way self-interest is concerned with the success of the Architectural Exhibition, the other means—the education of the public eye and taste—is not less in every way of moment. With all the prominence of architecture—or at least, buildings—the public attention seems to require to be still made alive to the fact of the importance of architecture as an ART, and its interest as a study. We have no cause to complain of inattention to archæological study: perhaps we should rather speak of the excess of it: but it is yet, we fear, undeniable that the *art* of architecture has something of its proper position to recover, even with those who apply themselves to special branches of architecture. And it is also desirable that architectural drawing should be better appreciated, and better understood. The public would be led to a higher view of the preliminary labours which are essential to the production of a good design, could they have the opportunity of seeing more of what those preliminaries are; and the knowledge of the technical language of plans, elevations, and sections, it is most desirable should be no longer a dead language to the public. Drawings of this kind, therefore, should not be omitted: and although the rooms are not at all too large for such an exhibition as architects might be expected to get together, a small scale for the several drawings of each design, would perhaps allow space for all the works that there need be, whilst it would give ready facility for reference. We would also suggest that some attention beyond that of former years, should be paid to classification. When the writers to whom architecture is consigned in the newspapers, find a drawing of an old Gothic church occupying a central space, they are apt to walk away under the belief that modern architecture is nought, instead of being what it is,—auspicious of a glorious future.

It is important that the public eye should be led to appreciate even these works: and on every account we would have them exhibited: but if there be one object more than another which is to be kept in the foreground, it is that of the present state of art. We believe that the existing race of English architects have the capacity for great works: and we hope that for once the opportunity will be taken to show what they have done, or might do. We shall look closely to the result.

THE GLASS TRADE.—Messrs. Hartley and Co. of Sunderland, says the *Darlington Times*, have received a large order from the Sardinian Government for their rough plate-glass, and have just forwarded a consignment to his Majesty the Emperor of the French for the use of his vineries at St. Cloud, &c.

ARCHITECTURAL EDUCATION AND EXAMINATION AT BERLIN.

THE following are the general abstracts of Regulations for Architectural Education and Examination at Berlin—translated from the original papers—which were referred to in the address of Mr. Tite, at the Institute of British Architects, on the 5th inst.:—

Regulations for the Royal Architectural School at Berlin, 1849.

1. Title, &c.
2. The school is under the Minister of Trade. A committee manages the details, consisting of a managing director, named by the minister, and two members of the Upper Board of Works, one for architecture proper, the other for civil engineering.
3. The regular lecturers are appointed by the minister, on a recommendation from the committee.
4. Extra professors, &c. may be appointed by the committee for special purposes.
5. Applications for admission must be made in writing four weeks before the commencement of each half-year (8th October and 8th April).
   In October of each year a new series of lectures, &c. will be commenced.
6. On application for admission the following certificates must be brought:—
   I. By those who wish to enter Government service—
      a. That they are first-class men in some approved gymnasium, &c.
      b. That they have had at least one year's practice under one or more architects.
   II. By those who only wish to become private builders—
      That they have passed the prescribed examination for masons or stonecutters, and carpenters.
7. Foreigners will be admitted (on same terms) so far as there is room.
8. A fee of ten dollars is to be paid upon matriculation. The course of study will at first be fixed for five years, but the term may be extended by the director.
9. Relates to details about attendance of the students at the lectures (*i.e.* they must at the commencement of the half-year signify what lectures they purpose attending, and upon payment of the fees they will receive tickets of admission).
10. If there is room, the director may grant admissions (on payment of the fees) to specific lectures to any person, not a student.
11. Upon request, the students may have certificates as to the lectures they have attended.
12. The halfyearly sessions commence on the 8th October and 8th April, and close on the 20th March and 31st October. A week's holiday at Christmas, Easter, and Whitsuntide.
13. The lectures are so arranged, that the surveyors' course may be completed in two years, that of architects proper in one, and that of civil engineers in one.

Course of Lectures at the Royal Architectural School in Berlin.—Winter Session, 1851-2.

[N.B. The fees are all calculated at the rate of a three-quarter dollar (2s. 3d.) per hour of weekly instruction.]

	Hours per Week.	Fee in Dollars.
1. Stereometry, Spherical Trigonometry, Analytical Geometry	4	3
2. Simple Analysis, Differential Calculus, Law of Curves	4	3
3. Descriptive Geometry	6	4½
4. Physics, with relation to Heat, Light, Electricity, and Magnetism	4	3
5. Chemistry, with relation to simple Materials connected with Building	4	3
6. Construction of Buildings, Drawing	6	4½
7. Ancient Architecture, Application to present Time, Outline Drawing, first part	8	6
8. Line and Architectural Drawing, first part (Ornamental Drawing)	4	3
9. Dynamics, first part	10	7½

	Hours per Week.	Fee in Dollars.
10. Planning and Drawing Buildings, first part	4	3
11. Farm Buildings, with Internal Arrangements	6	4½
12. Ancient Architecture, third part (Drawing)	6	4½
13. Line and Architectural Drawing, third part	4	3
14. Elements of Road and Bridge Making, and Hydraulics, first part	3	2¼
15. Machinery	6	4½
16. History of Ancient Architecture	6	4½
17. History of Architecture when the Arts flourished in Italy	6	4½
18. Drawing from Models, &c.	6	4½
19. Plans of Public Buildings	4	3
20. Ornamental Drawing, first part	4	3
21. Doctrine of Probabilities (applied to the Theory of the Correctness of Observations)	4	3
22. Hydraulics and "Waterworks" in general	12	9
23. Railways	3	2¼
24. Machinery	8	6

The extra lectures comprise,—"Further Practice in the Differential Calculus," "Conic Sections," "Integral Calculus," "Warming and Ventilating Buildings," "History of Greek Architecture," "Coloured Decorations," "Greek Forms of Art" (Buildings, Vessels, Implements), "English, French, and Italian Languages," and "Short-hand."

Regulations for Candidates, 1849.

1. The degrees of proficiency are,—
   - I. Surveyors.
   - II. Architects.
     - *a.* Architects proper.
     - *b.* Civil engineers.
   - III. Builders.
2. Relates to the certificates to be handed in by candidates for the surveyor's examination.
3. If these certificates are found satisfactory the candidate will be examined.
   - *a.* On the scientific and technical subjects which are the basis of the further studies of building students.
   - *b.* On knowledge of land surveying (no long practice required).
4. Relates to the certificates to be produced by architects and builders.
5. If these are satisfactory, some suitable design will be entrusted to the candidates, proper time and means of assistance being afforded.
6. After this is completed the examination will take place.
7. The Royal Upper Board of Works ("Bau Deputation") constitute the Board of Examination, but the Minister of Trade may appoint additional examiners if he think fit. Their report is to be confined to the results of the particular examination, specifying each department of the subject.

   The *viva voce* examinations are public, and the drawings, &c. of the candidates are at the same time to be exhibited. Unsuccessful candidates are allowed a term, after which they may try again; failing again, no further trials will be allowed.
8. The surveyors, when sworn, are competent to manage the execution of plans, under the supervision and technical responsibility of an architect. Their statements as to size and quantities are to be relied upon (*i. e.* as evidence).
9. Surveyors who only wish to become "road inspectors" need not pass the architect's examination, if they can prove a five years' satisfactory practice in road making.
10. Architects may undertake the completion of designs, &c. on their own responsibility, and are competent to fill any suitable Government office.

    Builders may execute designs on their own responsibility, but only for simple "Country architecture" ("nur für die Gegenstände des Landbaues").

    They are not eligible for Government appointments, and may only fill a "Communal" office when that does not require attention to roads and "waterworks" (wege-und Wasser-Bau).
11. Surveyors, architects, and builders may only execute such land surveys as are immediately involved in the practice of their profession.
12. Architects may only carry on any building trade (carpenter, mason, &c.) on their own responsibility when they have passed the examination for the trade in question.

Mode of Procedure at the Examination of the Candidates.

1. Examinations for surveyors take place half-yearly after the close of the lectures at the Royal Architectural School in Berlin.
2. Candidates must prove—
   - *a.* That they come from the first class of a gymnasium, or of one of the "real-schulen," approved by the Government.
   - *b.* That after leaving school they have had one year's practice, in counting-house duties and in out-of-door building work; and that, after this—
   - *c.* They have passed through a course of two years' study at the Berlin Architectural School, or one of the affiliated establishments; in which case the course of study must be stated in detail.
3. Candidates must also hand in—
   - *d.* A plan of a plot of ground with buildings, at least 5 acres extent, to a scale of 4 rods to an inch; also a table of levels with drawings (100 rods in length will suffice).
   - *e.* Sketch of a building or a machine, slightly coloured with Indian ink.
   - *f.* Other drawings, among which the perspective of a building, or an ornament, must be clearly shown.
4. In cases where the preceding are not satisfactory, or cannot be rectified in proper time, the candidates must wait till the next half-year.
5. Relates to time for the examination.
6. The examination commences with one week's work in private; and in the succeeding week follows the *viva voce* examination, lasting two days. According to the result in unsuccessful cases, a period of six or twelve months will be fixed, after which application may be renewed.
7. See also c § 8. Relates to the swearing in of surveyors, merely provided that they are to be sworn before the Royal Building Commission, if they have not been previously examined and sworn as land surveyors.
8. Candidates for the examination for architects must prove—
   - *a.* That they have passed the surveyor's examination.
   - *b.* That they have been actively engaged under one or more architects for two years.
   - *c.* That they have passed through at least one year's course of study after their having been examined for surveyors. So that no person can become an architect within three years of his having become a surveyor.
   - *d.* That they have had proper practice and experience in land surveying. (The superficial area must not be less than 500 acres, or if difficult, at least 200, and about 1,000 rods of levelling.)
9. Candidates for the builders' examination must prove—
   - *a.* That they have passed the masons', carpenters', or stone-cutters' examination; and—
   - *b.* With respect to course of study, the same as in § 2 c.

10, 11, and 12. Relate to the time to be fixed for the examinations.

13. Candidates for examination in both branches (country and decorative architecture, and civil engineering) must in addition to the preceding (§ 8) prove—
    - *a.* That they have practically learnt the trade of a mason, carpenter, or stone-cutter.
    - *b.* And have gone through a three years' course of study after having been examined for the above trades.
14. Unsuccessful candidates will be told when they may apply again for examination. If they are unsuccessful a second time no further application will be received.

By a supplement to the above, it is enacted that the integral and differential calculus shall, after 30th September, 1851, form part of the examination of surveyors—the same being now taught in the Architectural School.

Examination Subjects.

I. Surveyors (Bau-fuhrer).

Mathematics proper—
- *a.* Algebra, analysis (simple), logarithms.
- *b.* Geometry, stereometry.
- *c.* Descriptive geometry, projection, perspective, shadow.
- *d.* Trigonometry, superficial and spherical elements of law of curves, conic sections, cycloids, proficiency in algebraic and arithmetical calculations, and in use of logarithms, and in use of the methods of descriptive geometry.

Practical Mathematics—
- *a.* Land surveying, levelling.
- *b.* Elements of statics and mechanics, acquaintance with the standards of measure, hardness, friction, strength, &c.

Natural Sciences—
- *a.* Physics and chemistry (relating to materials used in building).
- *b.* Mineralogy and geology, signs and peculiarities of minerals used in building.

Country Architecture (Landbaukunst)—
- *a.* Knowledge of materials, their peculiarities, means of obtaining and preparing them, when taken from the vegetable world, their botanical relations.
- *b.* Acquaintance with the simple construction of all buildings (Baugewerke).
- *c.* Construction and arrangement of simple dwellings, farm and factory buildings, lime and brick kilns, &c.
- *d.* Ancient architecture, forms of, and application to buildings of our time.
- *e.* Making plans and corrections (revisions-nachweisungen).

Road and Railway Making; Waterworks (*i. e.* Buildings or Works in, or at, the Water)—
- *a.* Foundations in water, bridges, embankments, tide-walls, mill-races.
- *b.* General earthworks necessary in making a railway, with plans, sections, &c.

Construction of engines and machines, composition and working of those most frequently used in building,—mills, steam-engines in general.

II. Architects.

A.—For Country and Decorative Architecture.

The principal styles of architecture of all countries and ages, peculiarities, and advantages.

Laws of construction, applied to large and difficult designs, apparatus for heating, ventilation, cooking, washing, drying, filtration, &c.

Dynamics.

Decorative architecture, in all its branches, for public and private buildings.

Business arrangements, generally during progress of works.

B.—Waterworks, Roads, Railways.

Analysis (compound), law of curves, probabilities, land surveying.

Analytical dynamics (applied to Nos. 3, 4, 5).

Waterworks (Wasserbau)—
- *a.* Waterworks in general; atmospheric products; springs; irrigation; drainage; foundations, &c.
- *b.* Making canals, &c.; flow of water in beds of rivers; hydrotechnic measurements; means for regulating the current; for making rivers navigable; cleansing and deepening the channel; weirs; floodgates; rafts.
- *c.* Making dykes; drainage of embanked low lands; draining machines; sluices; breaches in the dykes.
- *d.* Land communications; ferries; bridges of wood, stone, and iron.
- *e.* Erections by the sea; succession of waves; ebb and flow; currents; strengthening or securing the shores, harbours, moles, docks, sluices; securing roadsteads and lighthouses.

Construction of Engines—

Knowledge of different forces; arrangements for their use; winches; levers; water-wheels; windmills; steam-engines; machines for rubbing, crushing, tearing, pressing, and condensing building materials, &c. &c.

Construction of railways—

Works underground with bridges over; works above ground; ascents and curves; optic and electric telegraphs; precautions against snow and quicksand; stations, with all buildings belonging; plant and rolling stock.

III. Builders.

The same II. A, 1, 2, 3, 4, and 5, reference being made when required to the points mentioned sub. I.

The examination in mathematics will not be confined to mere theories, but special cases will be given, the treatment of which will show whether these theorems are clearly understood.

One week will be devoted to exercises done in private: on the first day, a sketch must be handed in, the chief outlines of which must be adhered to afterwards.

Fall of a Large Building near Holborn.—On Wednesday in the present week a warehouse, occupied by extensive cutlers and hardwaremen in Eyre-street-hill, Holborn, fell to the ground shortly after some old houses adjoining it at the back were removed for the purpose of erecting new lodging-houses. It is said that a raking shore had been displaced contrary to the direction of the district surveyor, Mr. Legg. No one was hurt, fortunately; but much of the stock was buried in the *débris*.

THE NEW GRAMMAR-SCHOOL OF ST. OLAVE'S AND ST. JOHN'S, SOUTHWARK.

TRAVELLERS from the London-bridge Railway-station will have noticed on their left-hand, almost immediately after starting, an important-looking building, of red brick and stone, in the Tudor style of architecture, with gables and tower over entrance, according to rule. This is the new school of St. Olave's and St. John's, which has been erected under the direction of Messrs. Allen, Snooke, and Stock,—but mainly the latter; and on Saturday last, the 17th, the school was opened, on the occasion of the commemoration of the accession of Queen Elizabeth, whose name the school bears, and who granted its first charter of incorporation in 1571.

Let us say, in a parenthesis, because of our love for these old customs, that the proceedings commenced with the presentation of a bunch of roses to the warden and governors of the school, by the churchwardens and overseers of the parishes of St. Olave and St. John. A bunch of roses is the annual rent payable by these parishes to the governors for certain estates at Horsleydown, Meopham, in Kent, and Rudgwick, in Sussex. These estates are, from the peculiarity of the tenure under which they are held, called the Red Rose Estates.

We may get an outline of the history of the school from the address of the warden, Mr. J. W. Ledger, at the close of the proceedings.* "This being the first anniversary of Queen Elizabeth's accession to the throne which has been commemorated within these walls [said Mr. Ledger], I think it incumbent upon me to trace the history of our school from its earliest years. The first we hear of it in history is that in 1560 a benevolent and far-seeing man of the name of Leeke, a brewer in Southwark, left the sum of 8*l.* per annum for either of the parishes of St. Saviour's or St. Olave's, which should first be in a position to claim the legacy from having a school established. St. Olave's claimed it first, and the foundation of the school was laid in 1561. In 1571 it was incorporated by Queen Elizabeth. In 1579 the churchwardens of the parishes made over to the governors for the time being a piece of land of about 16 acres, called Horsleydown, which was then a field of common land where the poor could graze their cattle, dig gravel, &c. The archery butts were also placed there. The governors wishing to make the most of their property, immediately enclosed it, and were thus led into a great deal of litigation, which lasted for several years. Horsleydown was soon covered with houses, and it now forms the principal revenue of the school. This building is a part of it. The school continued to prosper. The parish of St. Olave was afterwards divided. In 1830 the old school, which was in Churchyard-alley, near St. Olave's Church, was required for the approaches to New London-bridge. The City gave a piece of ground near it, which was soon afterwards required by the London and Greenwich Railway. The ground in Bermondsey-street, upon which the school was built, was required by the railway company, who were obliged to invest the sum of 30,000*l.* in the Bank of England, unless they could find a site before three years were passed. This they could not do, and the present school was built.

The building comprises a Classical or High School, 88 feet by 40 feet, and 52 feet (a very satisfactory work, notwithstanding the windows), and an English school, 70 feet by 35 feet, 35 feet high. On the keystone of the vaulting to the entrance under the tower are the arms of Henry Leeke, the first benefactor to the school. They bear the following inscription:—"Henricus Leeke primus Inceptor. A.D. MDLX." The stone staircase, leading to the Court-room, is adorned with the arms of the Bishop of Winchester (visitor of the school), and also contains other appropriate devices. The Court-room is a spacious apartment, fitted with handsome oak panelling and having windows of stained glass, containing the arms of the present and late governor of the school. The cornice displays a series of shields on which the arms of former governors, from the first foundation of the school (as far as they could be ascertained) are emblazoned. The ceiling is panelled and ornamented with gilt pendants.

Beneath the Court-room is a library of equal dimensions and of similar character, but not so highly decorated, the only stained glass being an ancient relic preserved from the old school formerly in Churchyard Ally. It represents a Dial with a Bee, and contains the motto, "Aspice, Respice." There are, moreover, two convenient residences for the principal masters, and a neat porter's lodge.

The cost of the schools, with fittings and warming apparatus, supplied by Messrs. Haden, of Trowbridge (no small item), will be about 24,000*l.* Mr. J. Jay was the builder. We shall, probably, have occasion to return to this noble foundation.

* Full particulars of the meeting will be found in the *South London Local Journal* (a very good local paper just now started). In the same number (November 20th) will be found an interesting article on the "Ancient History of Horsleydown," by Mr. G. R. Corner.

ARCHITECTS' CHARGES.

MAY I, a constant reader of your journal, ask you to oblige me with an answer as to what is the correct practice of architects in the following cases. In alterations and repairs of buildings, where old lead is exchanged for new, should not the commission be upon the full value of the work done, including the new lead, and not upon amount of the builder's bill reduced by the price allowed by him for the old lead?

In cases of alterations, or other works, where old materials are re-used, should not the commission be allowed upon the value of the old materials so re-used? I think the answer must be in the affirmative, but as there seems some little doubt in certain quarters, I am anxious to have the best opinions. A. E. P.

*** In answer to the first inquiry, the commission is justly chargeable upon the full value of the work done, including the value of new lead, and irrespective of deduction for old lead. As to the second, it is usual not merely to charge the commission on the value of the *old* materials as re-used, but upon the value of such materials when *new*. One moment's reflection will show the perfect correctness of such a course. Many architects charge more than the ordinary commission, and with justice, for "alterations and repairs."

FOREIGN INTELLIGENCE.

Vienna Competition. — The Vienna municipality have offered a prize of 300 ducats (150*l.*) for the best plan of a bridge over the Wien, near the Caroline Gate. Its form and arrangement are left to the architect, but it must have but one arch, be calculated for the greatest weights, and possess great durability. The plan of the site is to be had of the municipality, and a term of six months allowed for the sending in of the plans.——The well-known pyrotechnic, M. Stüver, has invented a detonating signal for railways: besides the detonation a flame of different colours is developed, which will give certain directions to the engine-drivers, &c.

The Picture of Columbus, by Moritz Rugendas.—For some time past no picture has excited such interest as the above canvas of M. Rugendas, painted by order of King Maximilian. In a lifeful and true interpretation: we see before us that historical moment when Columbus descends with his followers on the shores of a new world. The task was difficult, but has been solved well by the German painter, who possesses the advantage also, that the depicting of tropical nature (animate and inanimate) has become familiar to him by his long residence abroad.

Remuneration of German Painters.—The picture which Frederic Overbeck has lately made for the Cathedral of Cologne, is now nearly ready. It has been presented to the cathedral by the Art-Union of the Rhine Lands and Westphalia, at Düsseldorf, which transmitted to Overbeck successively to Italy the sum of 5,230 thalers. Later, the chapter of the Dom added 2,000 thalers; making altogether 7,230 thalers—upwards of 1,000*l.*—a sum rather large in Germany and Italy.

France.—Working Men's Regulations.—The institution of *livrets*—a sort of behaviour-books for all sorts of working people—has been in existence for some years past, having originated during the first Revolution. A new law of 22nd of June last modifies it to the extent that the *livrets*, which hitherto remained with the masters, are to be in the hands of the journeymen, to whom they have to serve as passports, and for legitimation of good behaviour, &c.

The Catalogues of the Munich Universal Exhibition.—This most deserving *résumée* has been compiled under the direction of States-Councillor Hermann, and is a work possessing merit, describing the subjects exhibited under the grand point of view of industrial development. The twelve parts of the catalogue answering the twelve divisions of the exhibition, are also sold separately. Amongst them are the engines by Dr. Hülse, of Dresden; on tissues and leather, by Dr. Weinling; on earthenware and glass, by Dr. Knapp, of Munich; on minerals and fuel, by Councillor Schmitz, of Munich, &c. which all deserve the attention of those interested in these pursuits.

PROVINCIAL NEWS.

Wilburton (*Ely*).—The new schools in this village are now completed, and form the principal buildings in the village. They occupy a central situation, and are built with residences attached, faced with red bricks, and white brick and Bath stone dressings. The funds for liquidating the expenses have been raised by subscription, and grants from Government Board of Education and National Society. The works have been carried out by Mr. Freeman, of Ely.

Ipswich.—At a public meeting here, a plan has been brought forward for erecting a new Post-office, with convenient accommodation and shelter for the public, on the site of the present Post-office and adjoining houses at the corner of King-street. It is proposed to raise the money required, estimated at 2,500*l.* in 10*l.* shares, and nearly 100 shares were taken in the room. The erection is to be of white brick, with stone facings, rusticated basement, and a loggia for the public, supported by two pillars in the centre. The design is by Mr. Woolnough.

Cleveland.—The development of the mineral wealth of Cleveland, in the North Riding of Yorkshire, on the completion of the North Yorkshire and Cleveland Railway (now in course of construction), has already caused the origination of several companies to erect blast furnaces and manufacture pig-iron, as it is generally considered that pigs can be made in this district cheaper than in any other part of the kingdom. A joint-stock company of this description has just been formed at Bishop Auckland. One or two are projected at Newcastle-on-Tyne for a similar purpose, and others are being originated. It is said that one very large company is about to be formed, with a capital of 300,000*l.* to make all descriptions of iron on an immense scale.

Bradford.—The first stone of a pile of new buildings about to be erected in Well-street was laid on Thursday before last, and in the evening a dinner was given by the proprietors to the successful and unsuccessful contractors and various friends, about eighty in all. The premises will be extensive, though not specially ornamental. The length of frontage to Well-street will be 180 feet, and the height from the causeway to the top cornice, 76 feet. There will also be frontages into Swaine-street and Hall Ings. It is adapted for either one or two stuff warehouses, with market-rooms, &c. and will have fire-proof hoists and staircases, and the ground story will also have a fire-proof floor, constructed with iron girders and hollow brick arches. It will be seven stories in height, including the attic, the roof being supported from cast-iron jackings. By an arrangement with the Corporation, according to the local *Observer*, the narrower portion of the street opposite the building will be widened to the width of 15 yards (now short of 12 yards), and this arrangement causes the front to Well-street to be of the crescent form. The contractors for the masons' work are Messrs. James Burnley and Co.; carpenters and joiners' work, Messrs. J. Wilson and Son; plumbers and glaziers, Messrs.

J. Keighley and Co.; plasterers, Messrs. Smith and Dixon; and slaters, Messrs. Joshua Hill and Sons. The ironfounders' and painters' work are yet unlet. The whole will be carried out according to the plans and under the superintendence of Mr. Milnes, of Bradford, architect. It is proposed as early as possible to extend this improvement in Well-street to the bottom of Kirkgate, so as to form one of the most spacious approaches into the town.

Sheffield.—The local Board of Guardians have resolved that it is necessary to erect a new workhouse for the Sheffield Union. The ratepayers had a meeting shortly before the guardians came to their decision, but were violently opposed to it; nevertheless the guardians passed their resolution by a majority of nine to three, and they have the power to proceed independently of the decision of ratepayers on such a question.

Stockport.—At a recent meeting of the town-council of Stockport, the question of erecting a town-hall over the present court-house was referred to the General Purposes Committee of the council.——At same meeting the question of the establishment of public baths was referred to the council's Sanitary Committee.

Thurso.—At a meeting of a committee lately appointed for carrying into effect improvements at the Watermouth, according to the *John o'Groat's Journal*, a plan of a new harbour, by Mr. Magnus Tait, architect, Wick, was approved of, and Mr. Tait has been authorized to draw out a plan, in extension of the sketch already submitted, with relative specifications, with a view to advertise for contractors, so that the work may be proceeded with without any further delay. New water-works, it appears, will be commenced here in the beginning of spring.

CHURCH-BUILDING NEWS.

Dorking.—The new cemetery here has been completed, and is about to be consecrated and opened. The whole has been done, it is said, considerably below the estimated cost.

Hemel Hempstead.—The church, schools, and residences, now completing here, were opened on 13th inst. They consist of boys' and infants' schools, each 48 feet long, and 18 feet wide, with class-rooms attached, 18 feet by 15. The residences each contain living-room, kitchen, scullery, three bed-rooms, and necessary conveniences. The buildings are erected in the Decorated style, the materials used being red bricks, with dressings of Caen stone. The roofs, which are surmounted by a light spire, are open timbered, varnished. The ground is enclosed with a stone coped dwarf wall and ornamental railing. The institution has been erected by subscription, headed by Sir Astley P. Cooper, bart. of Gadebridge, and aided by a grant from the Government. The architect is Mr. George Low, of London; and Mr. Groom, of Hemel Hempstead, is the builder. The cost, exclusive of ground, is upwards of 2,000*l.*

Ilfracombe.—The new church at Ilfracombe, the completion of which has been delayed from want of funds, will, in the course of the next twelve months, it is expected, be consecrated. It is understood that a London merchant, visiting Ilfracombe, and hearing that there was no hope of carrying out the original design, has undertaken to finish the structure, to endow it, and to build a parsonage-house for the incumbent, all on condition that his own name shall not transpire. The cost of completing the church alone, it is said, cannot be less than between 2,000*l.* and 3,000*l.*; while the endowment and the erection of the parsonage-house will raise that amount to upwards of 4,000*l.*

Broadwater.—The reopening of the chancel of Broadwater Church took place on Sunday in week before last. A subscription had been started for placing an obituary window in the chancel, and during the preparation of the works necessary, Mrs. Thwaytes contributed a stone reredos, &c. The old window at the east end of the chancel selected, was in a very dilapidated state, so much so that its removal was determined upon. From further examination it was found that there formerly had been a three-light Early English window: this gave rise to the wish of adopting the present triplet of Early English character, although of somewhat later date. The window is divided by detached clustered columns, with deeply moulded arches and tooth enrichments in the heads. The spandrils are filled up with diaper work and sunk moulded trefoil panels of carved scroll foliations, intertwining initials, and the whole surrounded by an inclosing arch of zigzag ornament. This work had been set when it became apparent that the painted glass and reredos could not be fixed with safety without further and extensive repairs being first executed. An examination, therefore, was directed to be made of the roof, groining, and walls, all of which were found to be in a dilapidated and dangerous state: it was, therefore, determined to take down the groined ceiling and walls, and to restore the walls, if possible, to their original position, from their having become deflected from the perpendicular some 14 or 16 inches each side outwards, crushing the stone buttresses. After removing the groining, the righting of the walls was performed by placing on the outside at the back of the buttresses half balk timbers resting upon strutts; and through these and the openings of the side windows passing iron screw tension rods, with square outside nuts, three to each window: to two of the bolts of each set heat was applied, by covering them with lighted charcoal, supported in iron troughs running parallel with the rods. The rods thus heated expanded in length, and whilst expanded were screwed up tight, then allowed to cool and consequently to contract, the unheated bolts being preserved as safeguards. This process was repeated of course, as in previous instances, and the walls were eventually brought back to the perpendicular. The crushed buttresses were removed where necessary, and new lancet windows have been inserted on either side of the chancel, the groined ceiling renewed, and the whole newly roofed. The work which had been suspended in the inside was again resumed. The reredos, like the window, is of Early English work, and is divided into three compartments, the centre of which has three deeply mounted arches trefoiled on the inside and enriched with carved spandrils and tooth mouldings, clustered columns with shafts of polished Purbeck marble enlivened with tooth enrichment of Caen stone between the shafts. The columns rising from a high base of polished Purbeck, have caps of Caen stone, carved in foliated work, adaptations from Lincoln, St. Alban's, Winchester, and Salisbury. The whole spandrils above the arches are diapered, and have trefoil panels enclosing foliated initials. The centre compartment has an illuminated cross in gold on azure ground of diapering, dotted with stars and labelled with a text. The side compartments are surmounted with carved canopies. The side walls, on either side of the reredos, have an arched arcade running to the altar rail, with slight detached annulated Caen stone columns, with draperied spandrils above, while on either side are recesses for sedilia. The walls between the columns are lined, and the floor is laid, with Minton's encaustic tiles. The painted glass of the new window is by Mr. Willement. The centre light has the Ascension of our Lord: the upper and lower portion of each light is of tabernacle work with labelled texts, and the head above the canopy has a monogram of the Holy Trinity. There has been placed on the south side of the altar an obituary window, by Capt. and Miss Stringer.

Gloucester.—We lately gave some account of the progress made in the restoration of the cloisters of this cathedral by the introduction of stained-glass memorial windows. Further restorations are proposed for the body of the edifice, and operations have been commenced in a portion of the nave and a north aisle, in order to see what effect the restoration of the whole would have upon the interior. The white and yellow wash upon the stonework of one of the piers has been removed, and the stone painted. On removing the wash, it was found that the lower portion of the pier was calcined by the burning of the old wooden roof prior to the erection of the present vaulting. The vaulting-shafts were discovered to be of marble, and are now cleaned and polished. Remains of colour sufficient to make a correct restoration were discovered on the capitals and bases of the vaulting-shafts and the mouldings connected with them, particulars of which are preserved. On removing the bases of the pier (which is modern), and excavating below the present level of the nave, the original floor was discovered about 10 inches deeper than the present paving. It appears to have been composed of encaustic tiles, and the pier itself stood on a large square base below that which now appears. During the recent examinations which have been carried on by the chapter architect, several interesting discoveries have been made.

Presteign.—The parish church here was lately re-opened, after having been closed for about twelve months for renovation and repairs. An addition has been made to its size by doing away with galleries. The chancel has been considerably heightened. The east window is of stained glass. The pews are of pinewood, stained and varnished. The church contains now 120 large pews, in addition to which a large space, formerly called the "Little Chancel," is converted into sittings. The chancel pillars and arches have been scraped, and the stonework freed from plaster, and the walls and monuments renovated. The chancel is paved with encaustic tiles from the manufactory at Lugwardine. The window was the gift of Mrs. Evans, of Greenfield, near the town. It is formed of two divisions—upper and lower—having five compartments in each. In the lower division is represented the Saviour on the Cross, with a Mary on either side; the outer compartment on each side being filled with a border. In the upper division is represented the Ascension of the Saviour with the Apostles on either side. Arranged above all are several passages from Scripture. Mr. Page, of Leominster, was the contractor for the restorations.

Keighley.—The Burial-board of this place has instructed their clerk to borrow 4,000*l.* for the purchase of 11 acres of land at Utley, about a mile from the centre of the town, on the Skipton turnpike road.

Sheffield.—The parish church is to have its chancel thrown open, by the removal of the organ and screen from its present position, and otherwise improved, at a cost estimated by Mr. Flockton, architect, at about 500*l.*

Crosby.—The consecration of the newly-erected church at Crosby was performed in week before last by the Bishop of Carlisle. The edifice is of new red-sandstone, in the Florid Gothic style of architecture, with a round tower.

THE BIRMINGHAM AND MIDLAND INSTITUTE.

BIRMINGHAM is moving. The want of a Literary and Scientific Institution there, commensurate with the character and requirements of a town where the occupations of the great majority of its artizans demand a certain amount of mechanical, chemical, or artistic knowledge, induced a number of gentlemen, some time ago, to endeavour to supply that deficiency. In January, 1853, they obtained the sanction of a public meeting, presided over by the Mayor, to the scheme of a Literary and Scientific Institute. In 1854 the Institute was incorporated by Act of Parliament, and the town council granted a site adjoining the Town-hall for the proposed buildings, on condition that 10,000*l.* were raised and available for their erection.

The liberality of the noblemen and gentlemen of the neighbourhood, of the ironmasters of the district, and of the inhabitants of Birmingham, placed a considerable portion of the required sum in the hands of the Council of the Institute, and several friends to the undertaking having entered into a personal guarantee for the balance of the stipulated 10,000*l.* designs were obtained from ten architects, and from these, as our readers have already been informed, the design submitted by Mr. Edward M. Barry, the younger son of Sir Charles Barry, was selected. The full development of the scheme of education will require at least double the amount of the funds now in hand, and the Council appeal to the inhabitants of the town and district, and to the friends of education generally, for the means of founding this great Industrial College.

The plan of the Institute embraces a General Department and Schools of Industrial Science.

Under the former head are—1st. The Literary Branch, comprising libraries, reading-rooms, and lectures on subjects kindred to this branch. 2nd. Museums. 3rd. A Collection of Mining Records. 4th. Lectures on general Scientific Subjects. 5th. Periodical Meetings for the reading and discussion of original communications, upon the plan of the sections of the British Association; and 6th. A Gallery of Fine Arts, for the reception of examples of painting and sculpture.

The other department is a School of Industrial Science, the members of which are provided with systematic lectures and class instruction in the various branches of science, with especial reference to their particular occupations; and will also partake of the advantages of the General Department. The classes, some of which are already in operation, will include chemistry, as applied to the various manufactures and agriculture, mechanics, metallurgy, mineralogy and geology, ventilation of mines, and mining engineering. The education of artisans, practical miners, and others, in the scientific principles of their daily avocations is thus a primary object of the Institute.

The Museums will be devoted to geology, mineralogy, their economic application, such parts of natural history as illustrate these sciences; those animal and vegetable productions used as raw materials in manufactures; manufactures, particularly those of the district, comprising specimens of articles in their different stages of process, and finished articles of different dates and countries; to models and specimens of machinery, tools, furnaces, and other instrumental means and appliances used in the various manufactories.

It is evident, as the council say, that the museums will be of great utility to persons engaged in the arts and manufactures; to the ironmaster, by the exhibition of the different kinds of ores and iron, and models of furnaces and machinery used in different parts of Britain, America, and the Continent; to the architect and builder, by the exhibition of building materials, with records of their cost and durability; and to the manufacturer, designer, and modeller, by the exhibition of raw materials and finished articles, remarkable for their artistic beauty, novelty of construction, or excellence of workmanship. The collection of mining records will be of peculiar value in this district, by affording information as to the position of old workings, and the situation and peculiarities of the strata in which the minerals occur; and the classes of industrial science will confer an important benefit on manufacturers and artisans, in placing within the reach of the pupils a knowledge of the scientific principles involved in the various departments of manufactures and art.

On Thursday last (the 22nd), too late for us to do more than mention the fact, the first stone of the proposed building was laid by His Royal Highness Prince Albert, and we here give a view of the building and the plan of the principal floor. A general description has already appeared, page 442, &c. The site for the building is a plot of land against a block of houses, with Paradise-street at one end of it, and Edmund-street at the other.

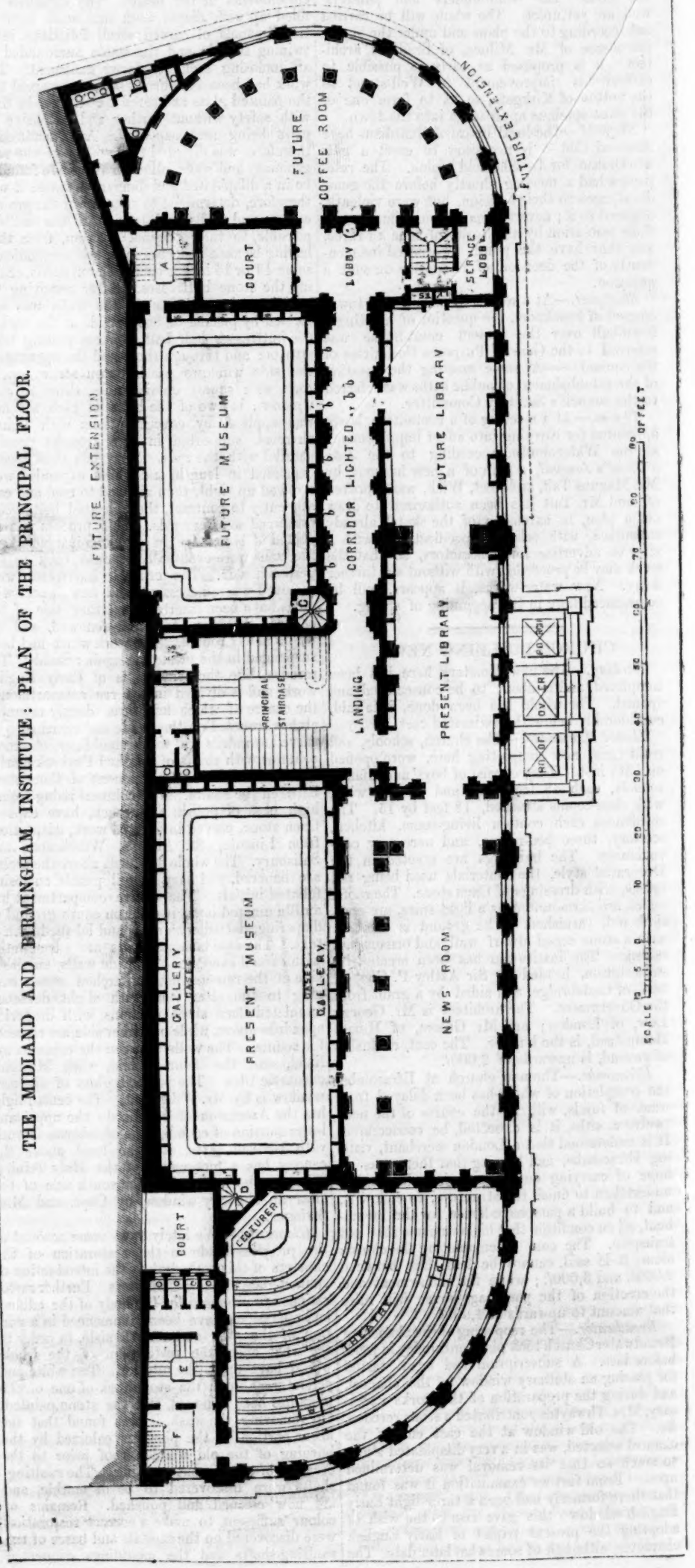
The chief difficulties the architect had to contend with were, first,—the peculiar shape and levels of the ground; second,—the necessity of keeping the several departments (namely, the General, the School of Art, and the Industrial) distinct and with separate entrances; third and chief,—the prescribed condition that a part only of the Institute, also prescribed, was to be erected at present, but that the remainder was to be so arranged as to be merely an extension of the present arrangements.

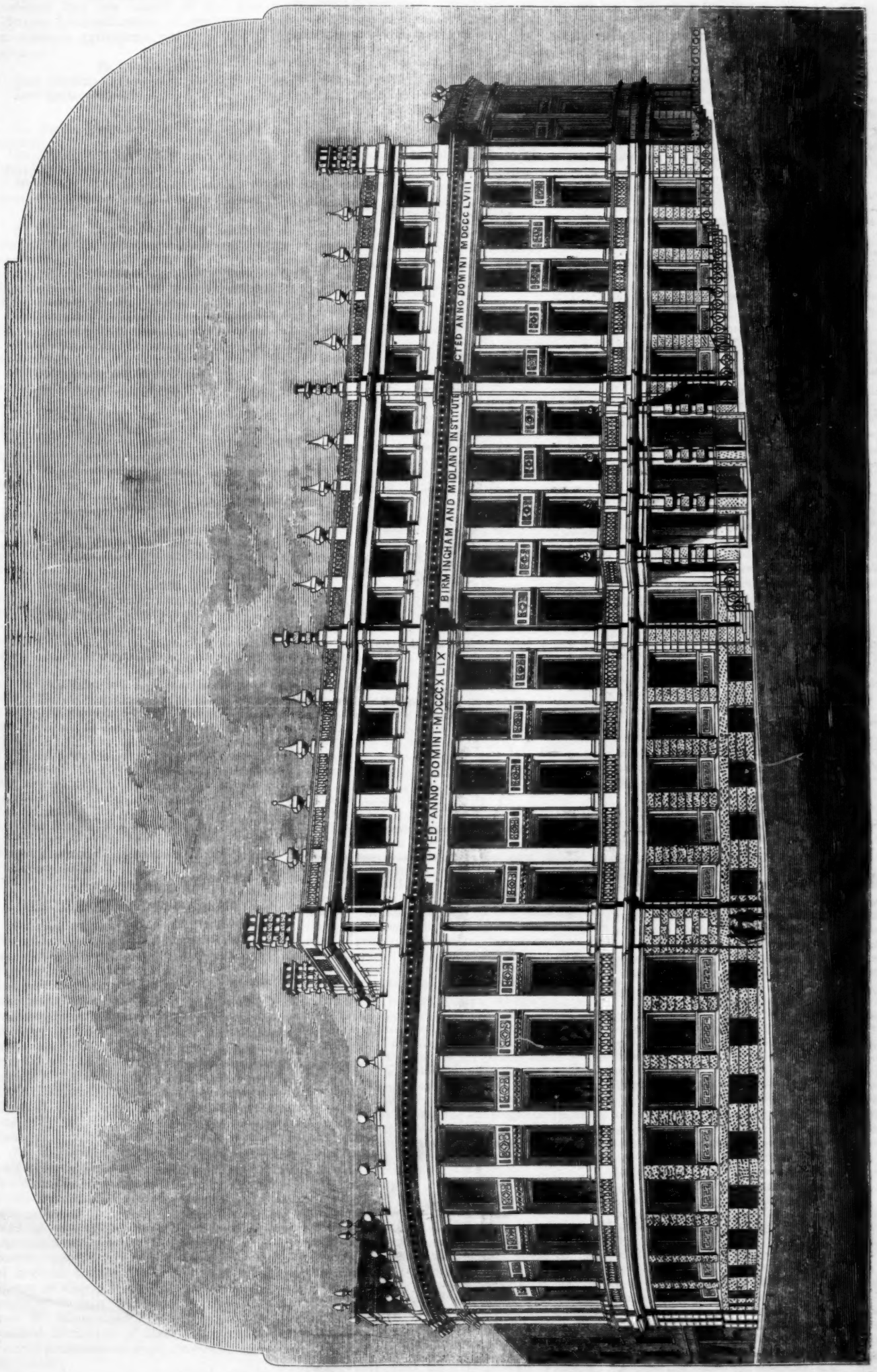
We may say, broadly, that the General Department occupies the ground, principal, and basement floors, and is devoted to museums, meeting-rooms, mining record-room, news-room, libraries, coffee-room, theatre, and secretary's residence.

The School of Art occupies the whole of the two-pair floor, and comprises class-rooms, master's rooms, library, &c.

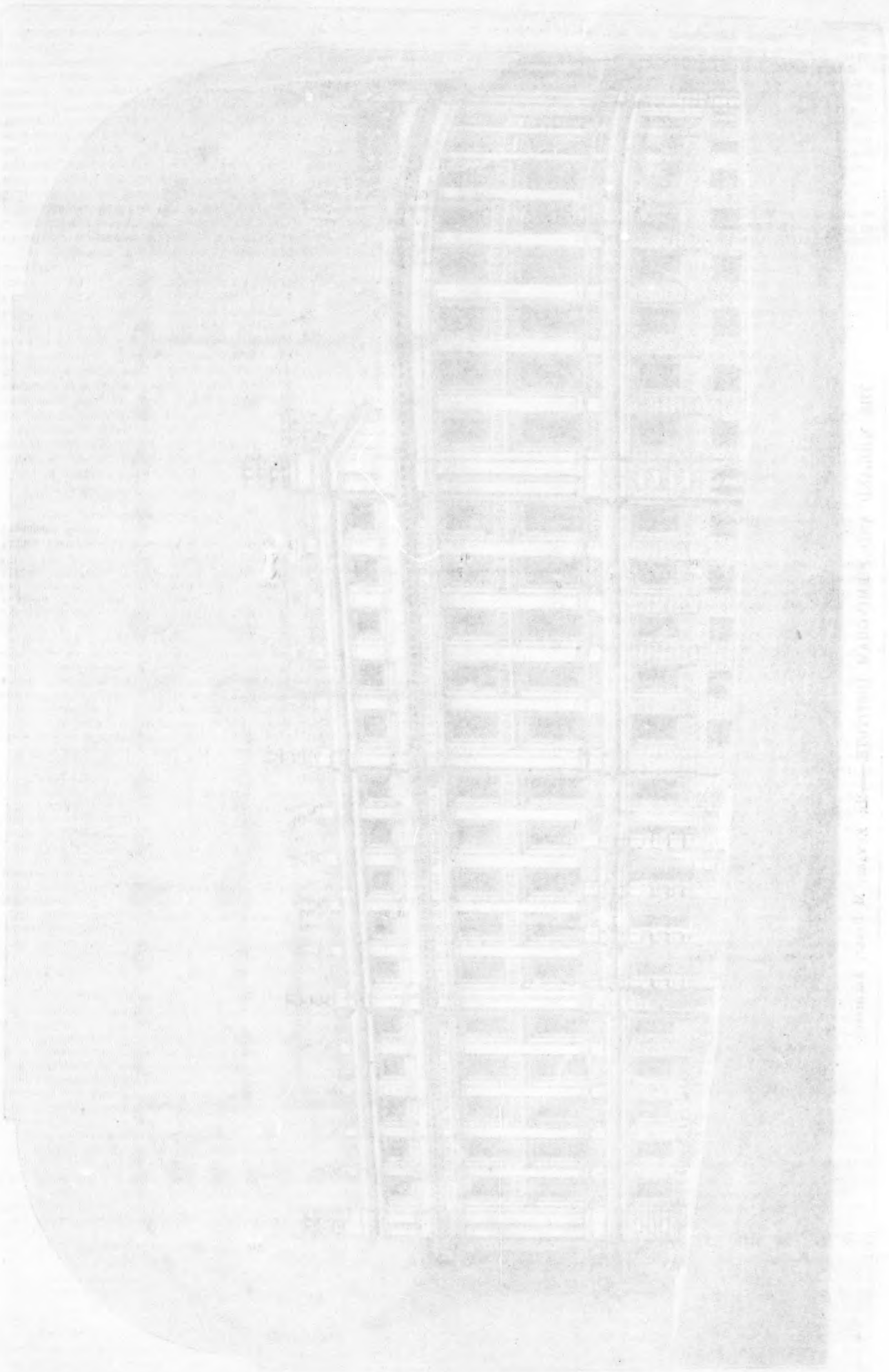
The Industrial Department occupies the whole of the three-pair floor, and comprises accommodation of a similar description, but less in amount.

THE MIDLAND AND BIRMINGHAM INSTITUTE: PLAN OF THE PRINCIPAL FLOOR.





THE MIDLAND AND BIRMINGHAM INSTITUTE.—Mr. Edward. M Barry, Architect.



THE PARIS EXHIBITION.

THE following English members of the International Jury are named of the Legion of Honour, in consideration of services rendered to sciences, agriculture, industry, and the fine arts :—

To be Commanders.

Lord Hertford—Encouragement given to the arts.
Lord Ashburton—Services rendered to commerce.

To be Officers.

Sir David Brewster—Discoveries and works in optics.

Mr. Thomas Graham, Grand Master of the English Mint—Services rendered to science.

Mr. Bazley, President of the Chamber of Commerce of Manchester—Extensive manufactures.

To be Knights.

Sir William Hooker, Director of the Royal Gardens at Kew—Important services rendered to natural sciences.

Mr. Wilson, Professor of Agriculture at the University of Edinburgh—Remarkable collection of English agricultural productions.

Mr. Crampton, engineer of the Submarine Telegraph—Invention of a locomotive of great speed.

Mr. Robert Willis, Professor of Natural Sciences at Cambridge.

Mr. Wheatstone, Professor of Natural Philosophy at King's College — Application of the Electric Telegraph.

Mr. Hoffman, Professor in London — Chymical operations applied to glass.

Mr. Walter Crum, manufacturer at Glasgow—Perfection of his printing on cloth.

Mr. Gibson—Services rendered to manufactures and commerce.

Mr. Digby Wyatt, architect—Services rendered to manufactures and to the arts—Establishment of Schools for Industrial Drawing.

Mr. Thomas Delarue (England) — For the importance of his manufacture of paper and his numerous inventions.

Mr. Twining—For the initiative taken by him for the exhibition of articles of domestic economy — Services rendered to the working-classes.

Lord Elcho (England)—Painting.

Rank in the Legion of Honour has been conferred also on the following gentlemen, in their character of exhibitors, or as having contributed to the success of the Exhibition, viz. :—To be Commander—Professor Michael Faraday. To be Knights—Messrs. Lawes, of Rothamstead; W. Fairbairn, London; Mr. Platt, sen. Oldham; Lord Rosse; Professor Airy, Greenwich; Mr. Brett, London; Mr. Tennant, Glasgow; Dr. Neil Arnott, London; Mr. Robert Napier, London; Mr. Brunel, London; Mr. Stephenson, London; Mr. Samuel Jackson, Sheffield; Mr. Elkington, Birmingham; Mr. Minton, Stoke-upon-Trent; Mr. Titus Salt, Bradford; Mr. Baxter, Dundee; Mr. Crossley, Halifax; Mr. Mulready; Sir Charles Eastlake; Mr. Gibson (sculptor); Mr. Cockerell (architect); and Mr. Lupton, Darnton (Vice-President of the Chamber of Commerce, Leeds).

ARCHÆOLOGICAL MEETINGS.

The Kilkenny Archæological Society.—The November meeting of this very thriving society was held in the Tholsel-rooms, Kilkenny, on Wednesday in week before last, the Dean of Leighlin in the chair, when another lot of new members, eleven in number, was elected, and various presentations made to the society, some of them by Continental and American associations, and others from the London and Edinburgh Societies of Antiquaries and other British societies. Articles of interest were also exhibited. Mr. H. O'Neill sent a paper on the Cross of Cong, and the Rev. J. Graves read a paper by Mr. J. P. Prendergast, on the Ulster Creaghts.

The Bedfordshire Archæological Society.—The public annual meeting of this society was held in the Bedford Library, on Monday before last, Capt. Stuart, M.P. in the chair. After an address by the chairman, the annual report was read by one of the honorary secretaries, and was unanimously adopted, and a list of office-bearers approved of. Mr. G. Hurst, the Mayor of Bedford, then read a paper on the "Manor-House of Cople Wood End," where Butler is supposed to have written "Hudibras." The Rev. W. Monkhouse read a paper on "The nominal Definition of Bedfordshire Villages." Several presentations were afterwards made to the society.

The Norfolk Archæological Society.—The quarterly meeting of this society was held on Thursday in week before last, at the Guildhall, Norwich, when a communication from Mr. G. Johnson was read, respecting some discoveries of Roman remains at Gooderstone. A letter was also read as to the discovery of several urns at Ditchingham. A paper was then read by Mr. Harrod, hon. secretary, on the visit of Queen Elizabeth Woodville to the city of Norwich in the ninth year of Edward IV.'s reign, as given in the City records. The same gentleman gave an account of some recent investigations by him at Burgh Castle. He had not only discovered portions of foundations similar to those he had found in 1850, but also of the wall itself, and of oak piling, on which it had been built. He had traced the foundations for 200 feet. Other discoveries were made, including an immense mass of Roman concrete. Mr. Harrod considered the foundations he had traced to have been those of the west wall of the castrum.

INSTITUTION OF CIVIL ENGINEERS.

ON the 13th instant the session was opened, Mr. James Simpson, president, in the chair, with a paper "On the Construction of Buoys, Beacons, and other Stationary Floating Bodies," by Mr. G. Herbert.

Floating sea marks, as ordinarily constructed, were, it was stated, admitted to possess the defect of riding uneasily on the waves, under which they were frequently buried, so as to be scarcely visible, when most required, besides which, it was not an uncommon circumstance, in heavy weather, to find that a buoy had broken its chain and floated away. The present form of the buoys, and the fact of the mooring chains being attached to a point far below the centre of gravity, sufficiently accounted for these and other acknowledged defects, and induced the proposition of a form of stationary floating body, which should have a tendency to ride easily, and to retain its perpendicularity, whilst the point of attachment of the mooring chain would be in such a situation as to subject it to the least amount of strain, and not be liable to draw the buoy down into the trough of the waves. With this view a wrought-iron pear-shaped buoy was constructed, of a circular form in plan, and terminating above in an apex, so distributing the weight, as that the centre of gravity should be situated a little below the centre of the plane of flotation, and the bottom was made concave and raised up internally, so as to form a cone, to the internal apex of which the mooring chain was attached.

This form was found so completely to answer the purpose, that several buoys were made by Messrs. Brown, Lennox, and Co. for the Corporation of the Trinity House, and were pronounced to be superior to any previously built.

Encouraged by the success of the first experiments, the Trinity House authorized the construction of a wrought-iron Sea Beacon on the same principle. The floating base was 20 feet in diameter, divided by radiating bulk-heads in six water-tight compartments: it drew 4 feet 6 inches water, and supported a tower, also of wrought iron, 28 feet high, 7 feet diameter at the base, and 3 feet 6 inches diameter at the top, surmounted by an iron ball of the same diameter. This beacon was moored in the overfall of the sea, at the South-Sand Head of the Godwin Sands, and was admitted to have been the best and most conspicuous sea mark ever laid down.

It was now proposed to carry out this principle of construction upon a larger scale, and to erect upon the floating base a tower sufficiently large to serve as a substitute for a lighthouse. A plan for such a structure, as submitted to the Trinity-house by Sir Charles Fox, was described. The floating base was 80 feet in diameter, and drew 20 feet water: the tower was 130 feet high, 24 feet in diameter at the base, and 14 feet at the lantern: the weight of the tower and lantern was 117 tons; and the total displacement of the whole building was 1,602 tons; the centre of gravity being 2 feet 6 inches below the surface of the water.

The new form of sea light-tower was proposed to mark the sites of shoals, or rocks, or islands, which were difficult of access.

The lighthouse on the Skerryvore rock occupied seven years in building, and cost upwards of 90,000*l.* whereas, by means of the Sea Light Tower, the same object might be accomplished in one year, at a cost of 30,000*l.* The site of the Bell Rock could be equally efficiently marked, at a cost of about 20,000*l.* instead of 60,000*l.*; and that of the Eddystone, at about 15,000*l.* instead of 40,000*l.*; and the new form of light towers would possess the advantage of being accessible in all weathers. The observations were limited to sea marks, but if the principle of construction proved to be correct, it would evidently be applicable to floating forts, and to almost every other description of stationary floating body, several designs for which were exhibited.

The Council of the Institution of Civil Engineers have awarded the following premiums :—

1. A Telford Medal, to James Barton, M. for his paper "On the economic Distribution of Material in the sides, or vertical portion, of Wrought-iron Beams."
2. A Telford Medal, to Edward Ellis Allen, Assoc. for his paper "On Steam and Sailing Colliers, and the various Modes of Ballasting."
3. A Telford Medal, to Richard Alexander Robinson, Assoc. for his paper "On the Application of the Screw Propeller to the larger class of Sailing Vessels."
4. A Telford Medal, to Joseph Phillips, for his "Description of the Iron Roof, in one Span, over the Joint Railway Station, Birmingham."
5. A Council Premium of Books, suitably bound and inscribed, to James Leslie, M. for his paper "On the Flow of Water through Pipes and Orifices."
6. A Council Premium of Books, suitably bound and inscribed, to Peter William Barlow, M. for his paper "On some peculiar Features of the Water-bearing Strata of the London Basin."
7. A Council Premium of Books, suitably bound and inscribed, to James Brunlees, M. for his "Description of the Sea Embankments across the Estuaries Kent and Leven, in Morecambe Bay, for the Ulverstone and Lancaster Railway."
8. A Council Premium of Books, suitably bound and inscribed, to Frederick Braithwaite, M. for his paper "On the Infiltration of Salt Water to the Springs of Wells under London and Liverpool."
9. A Council Premium of Books, suitably bound and inscribed, to George James Munday, Assoc. for his "Description of the Coffer-dams used in laying the Lines of Water Pipes from Richmond to Twickenham, across the Thames."
10. A Council Premium of Books, suitably bound and inscribed, to Lavington Evans Fletcher, Assoc. for his "Description of the Landore Viaduct, on the South Wales Railway."

SYMBOLS ON THE PENNY.

I APPREHEND that the Mint authorities will scarcely be thankful to "Penny Royal" for his attempt at a justification of the defects which I ventured to point out in our pennies. He alleges that the Scotch saltire IS verily on Britannia's shield, but that it is invisible, being overlaid by the Irish saltire,—much as Albert Smith's photographic friend assured him that, on the blank sheet triumphantly submitted to his admiring gaze, there was a highly romantic scene in the dark depicted, only it was invisible.

"Penny Royal" might in the same way justify Britannia's uneasy seat on the edge of the round shield, by assuring us that there is in fact a smooth heap of rock quite convenient just behind the shield: no doubt there may be; but we would like to see it. So Caledonia's sons want to see their national emblem on the union jack, and are not content to be put off with a paltry "fimbriation!"

"Penny Royal" appeals for justification to some article in a defunct periodical; whereas, I appeal to all the union jacks in the British navy. Are the mint authorities, or are the dockyard authorities right? *Both cannot be.*

"Penny Royal" seems quite disposed to go the whole animal, for he even defends the putting the trident into Britannia's *left* hand. Surely that is not "the right thing in the right place," anyhow.

S.

PRIZES FOR ARCHITECTS AND SURVEYORS.

THE courtesy with which you give insertion to the correspondence of your subscribers makes me bold enough to ask you to give publicity to a few remarks on some advertisements that appeared on the first page of the *Builder* last week. *Lowestoft* wants a man (they say a *surveyor*). The commissioners feeling the full importance of securing a properly qualified officer, determine to make the appointment public: so far so good. And as your *Builder* is the organ or representative of surveyors, through the channels of your pages, Lowestoft makes public its *want*, and likewise its munificence. You pay your gardener 1*l.* per week. The *very* light porters and messengers would scorn a situation of less value, and also that is paid weekly. Well, Lowestoft wants a *surveyor* for a *town* and *two parishes*. A man who can *make* plans, drawings, estimates, test materials, and see to the fulfilment of conditions of contracts; arrange sewerage and paving works; attend to the highways and byeways, even to surface cleansing, and superintend the execution thereof. For these various duties 50*l.* per annum, *payable quarterly*, with the servant's qualification,—three months' notice before leaving. Mr. Norton, the clerk of the commissioners, has boldly signed his name as the representative of this *want;* and I think that, for the information of the present state of the profession, he should give the result of his advertisement of the candidates and their testimonials, &c. &c. In the same number of your journal, the town-clerk of Hastings appeals to architects, *in any number*, to send in drawings for laying out nineteen acres of land as a cemetery, with chapels, lodges, and buildings, and promises that *one* of the candidates shall have 10*l.*—a sum, I will venture to affirm, that will not cover the expense the lucky man has incurred in tinting

the drawings; while another burial board (Northwood, Isle of Wight) offers similar terms for similar work, unless they make it optional with themselves either to employ the architect in the superintendence, or to keep his drawings for 10*l.* 10s. This is complete robbery; for I think after all it would be better to be paid for superintending the surface cleansing at Lowestoft at 50*l.* per annum than prepare all the requisite drawings, specification for nineteen acres of land, go down to the Isle of Wight (spend two days in the journey) to properly survey the site, and receive by a lucky chance in return 10*l.* 10s. If this be the payment for high art, I think many will have to end their existence either like Haydon, or in the workhouse. In making these remarks, Messrs. Norton, Shorter, and Damant have no right to complain, for *if they are right*, the effect will be for their benefit, viz. increased publicity to their *want*. J. B.

STAINED GLASS.

Memorial to late Lord Eldon.—Mr. Oliphant, of the New-road, has just completed a fourteenth-century window, designed as a memorial of the late Lord Eldon.

Trinity Church, Coventry.—Messrs. Heaton and Butler have obtained an order (in a competition of nine artists in glass) for placing a memorial east window in Trinity Church, Coventry, in honour of the late Mr. R. S. Cox, a benefactor to that city.

St. James's, Paddington.—Mr. Warrington has recently completed an east window for his parish church,—St. James's, Paddington.

Tralee.—Messrs. Gibbs have just executed sixteen stained-glass memorial windows for the Protestant Church, Tralee, Ireland.

St. Asaph.—The same artists are engaged to execute the stained-glass memorial window to the memory of the late Rev. Rowland Williams, many years one of the canons of St. Asaph Cathedral. The memorial is to be placed in the large west window of the cathedral, and will be finished in the early part of next year.

NEWCASTLE-UNDER-LYME SCHOOL OF ART.

THE annual meeting of the Government School of Art at Newcastle-under-Lyme, was held in the lecture-hall of the institution, on Wednesday before last. The meeting was most respectably attended, and included a large number of ladies. Mr. S. Child, M.P. having taken the chair, addressed the meeting in an able speech.

The present meeting, he remarked, was an educational one, but it was to promote education of a special and peculiar kind, and which, perhaps, might be looked upon as merely ornamental, and nearly superfluous. He thought, however, that the arts of design had a material value, and were of great commercial importance. He had lately read a practical book written by a very practical man, the late Mr. Loudon. It was the last work of his life, and did not savour much of romance. It was called "Self-instruction for young Gardeners." There was a chapter in it upon architectural and mechanical drawing, which might be fairly called the commercial view of the question. The author said we were indebted to architectural and mechanical drawing for that application of science and art to manufacture which had contributed to our ease and luxury, had rendered mankind more wise and more happy, and which in the present state of society was necessary to our comfort. As to the utility of beauty, the speaker urged that all beauty consisted of symmetry, and the adjustment and proportion of form which constituted symmetry, was only the source of strength and endurance. Take, as an example, a few of the familiar things used by us in common life. Of tables, chairs, cups and saucers, the ugliest were always the clumsiest and most inconvenient, for they were wanting of a due proportion of parts. On the contrary, those which were the most elegant were also the most convenient, the strongest, and the most economical. The same principle obtained in the animal world. Especially must it be apparent to us in those animals of whose physical strength man availed himself. If we wanted to buy a horse we chose the handsomest we could find or could afford to purchase, not merely because his beauty was agreeable to our taste, but because we knew full well that in his elegant proportions was the best indication of his health, vigour, speed, and endurance. And the human form furnished the same example. Almost every one was familiar, either from engravings or casts, with the beautiful statue of Apollo. It presented a perfect image of health and strength, and it did so because it was the very perfection of form;—and that was beauty. He had spoken of those who professed to be purely utilitarians, and were not disposed to regard with any interest any pursuit or occupation which did not directly produce pounds, shillings, and pence. There was a class—he hoped it was a small one—who were nevertheless disposed to look upon the arts of design as something idle and frivolous. If it was a foolish and an idle thing, however, to admire and copy the beautiful, why was the earth so beautiful? Why the gay flowers? Wherefore the bright plumage of birds? Why the sparkling stream, and the varied foliage, and the endless variety of hill and dale, and sunshine and shadow, which adorned this beautiful world? Why should not one form and colour pervade all nature, if it be foolish to admire and imitate the varied beauty with which our earth was adorned?

Mr. Wyse, M.P. Mr. James Bateman, and other gentlemen also addressed the meeting, and the report was read, which congratulated the friends and patrons of the school on the circumstance that it had maintained its position. There was an adverse balance, however, to a small amount. After these proceedings the prizes were distributed.

MEASUREMENT OF COMBE DOWN STONE.

WE have received letters from the Combe Down quarry-owners, complaining of the "sweeping" nature of the assertion. The question is, is it the general custom at the Combe Down Quarries to measure what the sellers call "close," but the buyers call "fraudulently;" or is this mode restricted to particular firms? We have seen copies of a correspondence on the subject (forwarded by the original complainant in our pages), wherein the parties complained of certainly admit the truth of the complaint, but attribute it to a custom of the Downs, which they cannot alter, and state that the price is fixed accordingly; in other words, that if full measure be given, the price per foot must be increased! If this really be the mode of doing business at Combe Down, the sooner an alteration be made the better. One of the results of course must be great loss to any contractor who should adopt in his estimates the price per foot advertised by the quarry-owners.

IS TOWN DRAINAGE BENEFICIAL?

SUNDERLAND.

THE corporation of the borough of Sunderland are about to drain the town at an estimated cost of nearly 100,000*l.*; and as the few existing sewers are of an imperfect construction, perhaps, with the exception of those laid within the last seven years, the whole town will thus be included in one comprehensive system. The population is rapidly increasing, buildings are extending in every direction, open spaces are being closed in, and in a few years the fresh air will have still greater difficulty in penetrating the narrow lanes of the old town, or in sweeping away the effluvia from the conveniences and ash-places attached to every house in the new town. The town is naturally well disposed for draining purposes, the gradients being uniform, continuous, and steep, and the arrangement of the leading thoroughfares convenient, running, as they do, towards the sea. Before entering into the responsibility of expending the large sum of 100,000*l.* the council have halted at the outset, and now ask the following questions:—1st. Is drainage beneficial? 2nd. If so, whether is surface or underground the most so?

A difference of opinion appears to exist on the question; in some instances probably the result of an imperfect acquaintance with the subject, or resulting from the ever-vexing question of rates; but in the main it is a difference of opinion—and an opinion held in abeyance till further information be obtained—based on the experience of other large towns as represented through their rates of disease and mortality. The discussion and settlement of this great question, in addition to the many others already discussed in the pages of your journal will be a world-wide blessing; and in order that additional weight may be conveyed to your non-professional readers, I would suggest that the names of your contributors who may be interested in the matter, and favour you with information, should in every case be given.

T. OLIVER, JUN.

Notices of Books.

A Lecture on the Position of Schools of Art. By E. POTTER, President of Manchester School of Art. London: Chapman, King William-street. 1855.

THE lecture by Mr. Potter here announced, was read at a *soirée* given by the Manchester School, on 30th ult. It contains a pretty full development of the author's ideas as to the important question of the position and prospects of schools of art in this country. Mr. Potter differs widely from the heads of the Government Department of Practical Art as to the best mode of administration for the promotion of art-education in the provinces. He objects to this being made a mere trade question. One thing, he remarks, is certain, and in this we cannot but agree with him, that local schools of art have as yet not been established on a permanent basis. The sum annually expended by Parliament or the Government in the promotion of art-education, he thinks, ought to be more equally distributed amongst the schools, and not so much restricted to the normal and other schools in the metropolis; but were the few thousands of pounds referred to so distributed, it seems very doubtful whether any benefit worth speaking of, either general or special, would result from such a subdivision of so small a sum. It is the author's opinion that a distinct and separate ministry of art ought to be instituted, or, in other words, that the Department of Practical Art, remodelled, should be entirely separated from the Board of Trade. The example of Paris, as a centre of art, the author thinks, should be inverted in this country, not imitated; that is, art-education requires to be diffused rather than centralized, and perhaps indeed it may be time enough to concentrate when the Government has radiated or diffused such a taste and knowledge of art as may be admitted already to exist in the provinces of France. Mr. Potter, however, appears to be much more anxious to point out the shortcomings of the Government than those of the provincial manufacturers and dealers, whose more immediate pecuniary interests will be largely benefited by the cultivation of a taste for and knowledge of art amongst the people.

VARIORUM.

A PORTABLE edition of the "Nuisances Removal and Diseases Prevention Acts, of 1855," by W. G. Lumley, Barrister-at-Law, has been published by Knight and Co. (Fleet-street). It contains some useful notes, and a report of the case, Jewell *v.* Etwall and another.——The fifteenth part of the "Micrographic Dictionary"* has been issued, and still sustains the interest of its previous issues. It is to be hoped that the authors and publishers will not hurry or shorten such a work on account of any mere impatience of its purchasers to have it completed. By-and-by people will not ask how long it took in the issue, but rather how the work is done.——The "Autobiography of a Beggar-boy" (Tweedie, Strand) describes the vicissitudes and adventures of a person of active mind and no little ability, but of very questionable worldly wisdom,—a "rolling stone" that seems to have been a long time in gathering any "moss," and a great politician withal, but who appears to have seen the errors of his ways, and at last to have settled down into gentlemanly respectability. The main purpose of the publication is said to be "to stimulate young men, to an endeavour to overcome the obstacles and difficulties which may surround their early positions in the world;" but we rather think it will be useful more as a beacon for the avoidance of many such obstacles and difficulties, than as a stimulus to face them, or a guide to conduct a young man through them. ——"A Plan for the Effectual Improvement of the River Thames, by Mr. H. Robinson, C.E. has been published as a tract by Johnson, of St. Martin's-lane, Charing-cross. The author proposes to run a dam, with locks, &c. across the river near London-bridge, by which means the permanent level of the water would be raised, the feculent mud and accumulations of sewage sediment drained off by degrees, without the possibility of returning; and hence the water above bridge be made comparatively clear and innoxious, notwithstanding the constant influx of sewage as heretofore. Various other supposed or actual advantages are pointed out, and disadvantages and objections considered. The objections to such a scheme are very obvious, but all such proposals have the good effect of sustaining and promoting the public deliberations on the subject of this monster nuisance, and there may be valuable suggestions in many different schemes, which may tend towards the solution of the problem when well considered and discussed.

* "The Micrographic Dictionary; a Guide to the Examination and Investigation of the Structure and Nature of Microscopic Objects." By J. W. Griffith, F.L.S. and Arthur Henfrey, F.R.S. Professor of Botany, King's College, London. J. Van Voorst, Paternoster-row.

Miscellanea.

THE SOCIETY OF ARTS.—On Wednesday, the 21st, the inaugural meeting of the 102nd session of this society was held at the Adelphi, when the medals awarded by the council for papers read at the weekly evening meetings during the last session, and for articles submitted to the society's committees, were presented to the various gentlemen entitled to them. An introductory address was delivered by the Rev. Dr. Booth, F.R.S. Chairman of Council. In the course of it Dr. Booth said,—"The council have gone to the expense and trouble of having a Bill carefully drawn, which, if accepted by the Government, and passed into a law, will settle the question of the *rating of Literary and Mechanics' Institutions* on a satisfactory and simple basis. I cannot, however, conceal from you my own impression that the Government will scarcely, at the present juncture of public affairs, accept a Bill which would necessarily open up a very wide and complicated financial question, and one, too, on which the best friends of the institutions are by no means agreed. It will be the duty of the council, however, to urge the matter on the attention of their Parliamentary Committee and the Government, and to use their best endeavours to bring the matter to a successful issue."

LAVA GAS-BURNERS.—The corrosion or rusting and choking up of metallic gas-burners is an old grievance, of which there has long seemed but little chance of getting rid, unless, indeed, by the use of some such unrusting metal as platinum or gold,—the sulphur in ordinary gas rendering even the less costly silver ineligible, though otherwise incorrodible. Some one, however, appears to have at length hit upon, and realized, the at least feasible idea of substituting a stony incombustible substance, which had already not only passed through the fire, but had lived, as it were, in, and been nourished and matured by, the fire itself, as may be said of *lava*, above all other stony matter. The gas-fitters and others are accordingly now, it seems, in course of being supplied with burners of this description, made of a close-grained and firm lava which admits of being turned, polished, and bored, to the requisite fish-tail, batswing, Argand, or other form, and either fitted with brass sockets, or simply shaped in the material itself, for mere insertion into the extremity of the branch-pipe or pendant. They are only of recent introduction, but have now been tested in the City, we are told, by nearly a year's constant use, without being either cleaned or touched, yet continuing, all that time, to yield the same full, clean, and well-shaped flame as at first, so as to be still equal to new, and, in fact, it is said, rather improved than otherwise by the action of the heat. Should the idea thus prove to be as practically useful as it certainly is feasible, metallic burners may at length be dispensed with.

THE BELLS FOR THE HOUSES OF PARLIAMENT.—Messrs. Warner, of Jewin-street, London, are about to cast the bells for the great clock of the Houses of Parliament. The principal bell is to be 9 feet diameter and to weigh about fourteen tons, and will be the largest bell (they say) ever cast in England. It is calculated that the four quarter-bells will weigh about ten tons more. The work is to be done from the directions of our correspondent, Mr. E. B. Denison, Q.C. from whose designs the clock has been made; and the bells are to be subject to the final approval of that gentleman and the Rev. W. Taylor, F.R.S. and Professor Wheatstone.

CAMBRIDGE ARCHITECTURAL SOCIETY.—The first meeting of the society for Michaelmas Term was held on Wednesday evening, November 7, the Rev. W. M. Campion in the chair. On the motion of the Rev. W. M. Campion, it was agreed to take some steps towards getting the subscription-list for a memorial window to the late Dr. Mill, in St. Andrew's Church, Barnwell, filled up. Mr. Bailey, of St. John's College, then read a paper on Cologne Cathedral. He dwelt chiefly on the history of the buildings, and read some extracts from Herr Bintzer's work on the Cathedral, which is now scarce. After describing the ceremony of laying the first stone, and the works till in A.D. 1163 the relics of the three kings were deposited there, he stated how spread their legion was, and mentioned that even in Carinthia their initials E. M. B. were found carved over house-doors. After giving a vivid description of the consecration of the choir in 1321, he drew attention to the dimensions of the cathedral.

LAMBETH PALACE CHAPEL.—I am not able to ease the mind of your correspondent, "One who does not Travel from Dan to Beersheba and find all barren," on the subject of the removal of the sham maple decoration on the ancient oakwork in the chapel of Lambeth Palace; but I can tell him this, and any one may see it from the steam-boats on the river, that the exterior of the said chapel has just been covered with a neat puritanical coat of yellow ochre, and looks horribly ill. ALPHA.

ELECTRO-TELEGRAPHIC PROGRESS. — The completion of the telegraph from London to Constantinople, has been announced. On the 1st and 2nd of October, says the *Malta Mail*, a submarine cable was most successfully laid down between Fort Kilia, near the entrance to the Bosphorus, and Varna, by Messrs. R. S. Newall and Co. of Gateshead-on-Tyne, the same firm that completed the lines between Varna and the Crimea a few months since. A land line of telegraph crosses the hills from Kilia to Therapia and Pera, so that instant communication may be made to and from all parts of Europe and the Crimea. The length of the Varna and Constantinople line is 200 miles, and the whole has been completed within three months. Messrs. Newall and Co. are now engaged in making a line of upwards of 800 miles in length, which will unite Constantinople and Alexandria.——The telegraph from England to India—a dream but yesterday as it were—bids fair to become a reality. The submarine line having been completed across the Mediterranean, the inventor is desirous to extend it to the Indian Peninsula. As far as Suez, says the *Friend of India*, he will be supported by the British Government, and his success is certain. From that point, however, he must trust to the East-India Company for official aid, without which it is impossible to raise the required capital.——The trial of persons at Berlin, accused of unlawfully revealing telegraphic intelligence for stock-jobbing purposes, came to a conclusion on 12th inst. Janck, the clerk, was condemned to three years' imprisonment, with loss of social rights as a citizen for five years, for having transgressed his official duties; Julius Reichenheim, for having bribed an official, to two years' imprisonment, with loss of social rights for two years; and Isidor Reichenheim, to half this term; Meyer, the banker, for being an accomplice in the bribery, to two and a half years' imprisonment, and three years' social degradation.

WATERWORKS.—The new waterworks for Ipswich are progressing. The great distributing reservoir at the top of Christ Church Park is finished, as also the auxiliary reservoir in St. Helen's. For months past gangs of workmen have been laying down the mains, and progress has been made with the machinery at the central works. The great reservoir holds upwards of half a million of gallons, and was filled on Thursday in last week. ——The Cheadle Waterworks were opened last week, and the completion of the works was celebrated by a public dinner. The water was got by piercing the sandstone strata at Monk's-hill, an elevated piece of ground overlooking the centre of the town. At 60 yards in depth an abundant supply of fine sparkling water was got. Reservoir buildings, and machinery for raising the water, were then formed, and the contracts for a general house supply are just completed. Service pipes have now been laid down to most of the houses. Mr. E. S. Gisborne, of Derby, is the engineer.——A committee has been formed at Taunton, for the purpose of obtaining information relative to the probable cost of supplying this town with water from the surrounding districts. ——The corporation of Oldham have begun to make a road from Ogden Chapel to Piethorn Clough, where they intend to erect their new waterworks. There are to be three reservoirs formed out of valleys in Ogden and Butterworth, near Milnrow. Each of these reservoirs will only require one single embankment, straight across a valley. The largest embankment will not exceed 400 yards.——The Selby Waterworks, under the superintendence of Mr. John Linton, will soon be completed: they now allow the inhabitants to have an abundant supply of spring water from an Artesian well 110 yards deep. Many persons have already got pipes and taps into their houses, and receive a regular supply of water.

EXHIBITION OF ART, &c. AT CARDIFF. — In the early part of December, an exhibition of art, manufactures, natural curiosities, &c. is to be held, with *conversazione* and dress concerts, in the Town-hall, Cardiff, and it is hoped that this spirited project may lead to the establishment of an institute and museum for the town: at all events, of the pecuniary profit of the undertaking, there appears to be every assurance. The Bridgewater exhibition yielded 1,350*l.* of which only 500*l.* were required for expenses, so that 850*l.* remained for the church restoration, to which it was devoted.

ST. PETER'S CHURCH, NOTTING-HILL.—The first stone of a church, to be called St. Peter's, has been laid on the Kensington Park estate. We are informed that it is to be in the Italian style of architecture, and Mr. Allom is the architect. The entire cost is estimated at about 5,500*l.*; and provision is made for 1,400 sittings. The extreme length is to be 100 feet; breadth, 60 feet, and it will have a tower 110 feet high. The interior will contain galleries, and be lighted from the roof.

THAMES-TUNNEL. — During the week ending 17th November, 20,505 passengers passed through, and paid 85*l.* 8s. 9d. in tolls.

FIRE-ENGINES IN PARIS EXHIBITION.—The trials of fire-engines in Paris appear to have been very indifferently managed. The feat most spoken of was performed by a London Brigade fire-engine, exhibited by Mr. Merryweather, of Long-acre, and named "The Emperor," worked by twenty-six men: it threw a three-fourth-inch jet upwards of 120 feet. Some of the engines produced could not be worked, because part had been mislaid.

THE "BLACK GATE" AT NEWCASTLE-UPON-TYNE.—The *Newcastle Chronicle* urges the destruction of this ancient landmark as an improvement; but chiefly because a penny rate may be requisite for its preservation, and recommends the application of such a rate, in preference, to the establishment of a free library. The *Gateshead Observer* expresses surprise that the destruction of the Black Gate, one of the most interesting archæological relics of the town should be advocated as a measure of improvement. "Great need, indeed, must there be, of free libraries in Newcastle," remarks the *Observer*, "Of the Black Gate be an eyesore to the inhabitants, and they be blind to the propriety of preserving the 'unsightly structure.'"

STATUE OF LORD MELVILLE AT EDINBURGH.—Operations have at length been commenced for placing Mr. Steel's colossal statue of Lord Melville, in bronze, on its site in the centre of the open space in front of the County-hall. The design and execution of the pedestal, which is to be an elevated one, have been entrusted to the superintendence of Mr. Bryce, architect.

THE WORKING CLASSES.—Lord John Russell, in presiding, the other evening, at the annual dinner of the Warehousemen and Clerks' School, in London, said—"It was somewhat of a misnomer to attach to any particular classes of the community the appellation of 'the working classes.' The fact was, that with the exception of a very few, all persons in Great Britain belonged to the working classes. From the Queen on her throne, who had her anxieties and cares, and who must dedicate some hours of each day to the consideration of matters connected with the public welfare, down to the humblest labourer, who was earning his few shillings per week, and including between these extremes statesmen and merchants, and landed gentry, who really did their duty to their tenantry and their labourers—they all belonged to the working classes. And shame to those who did not belong to them."

DESTRUCTION OF ANCIENT REMAINS AT SOUTHAMPTON.—Mr. Philip Brannon, in a letter to the *Hampshire Advertiser*, as to the south castle or old gaol and other remains of the town fortifications of Southampton, complains that one after another of these interesting remnants of antiquity are disappearing, and he charges the corporation formally with a determination to persevere in their destruction, and protests against such Vandalism, and urges the public and the writers for the press to lose no time in annulling such discreditable doings. The point at present in danger appears to be the south gate and castle or old gaol. A writer in the *Hampshire Independent* denies, however, that its destruction is already planned, and says he cannot believe that the town council will be such Goths as to destroy it, more especially since it may be made useful as well as ornamental by being restored.

THE PROPOSED FREE LIBRARY FOR ST. MARY'S, ISLINGTON.—It is much to be regretted that mainly on the already somewhat hackneyed, and in this case most irrelevant, plea of the war and its expenses, a veto has been put upon the useful project of a free library in St. Mary's parish, Islington, the majority at the meeting of Friday last having been against its establishment, or rather against the halfpenny or farthing rate which its establishment implied. That it would have ere long been the means of diminishing the poor-rate by much more than the full penny a pound rate which forms the maximum under the Free Libraries' Act, there can be no doubt, so that the refusal to incur the requisite outlay was, to say the least of it, very shortsighted, even as a mere pecuniary calculation of profit and loss.

TOTTENHAM CEMETERY CHAPELS' COMPETITION.—In response to the advertisement of the Tottenham Burial Board, for designs for the new Burial-ground Chapels, there were forty-seven competitors. The design selected was sent under the motto, "Labor et Spes." On opening the sealed envelope, it was found to have been sent by Messrs. Pritchett and Sons, of Darlington, architects, who are, therefore, the successful competitors.

RATING KEIGHLEY.—The Local Board of Health at Keighley having advertised for tenders for the making of a valuation-book of all the rateable property within the district, the following were received:

Mr. B. Hopkinson, Keighley	£60	0
Mr. J. Smith, Bradford (accepted)	30	0
Messrs. Turner and Rendall, Leeds	23	10
Mr. J. F. Higgins, Keighley	15	0

FOUNTAINS FOR HEREFORD.—In the *Builder* of last week you give the substance of a letter from a Hereford correspondent, signed "Aqua," in which he asks your readers to put him in the way of erecting fountains in the lawns and gardens of the citizens "*cheap, good,* and *elegant*." "Aqua," before making these suggestions, should make himself acquainted with the available pressure and the quantity of water likely to be consumed by the fountains: he says "*the pressure will be 25 or 26 feet,*" whereas it is nearly 60 feet. The quantity of water that is proposed to be pumped is only 40,000 gallons per hour, to serve a population of 12,000, so that a limit must be placed to the fountains; and the only fountain which is likely to be erected will be a public one in the square, the overflow from which is to be used for a swimming-bath, and will be erected under the superintendence of the engineer for the Hereford Improvement Works. —JUSTITIA.

PROPOSED EXHIBITION AT THE MANCHESTER MECHANICS' INSTITUTION. — The readers of our advertisement columns will perceive that the directors of this very useful Institution intend to inaugurate their new building with an exhibition of works of fine art and industry, and they invite those who recognise the educational value of such institutions to aid them by the loan of fitting works and specimens. We cordially second their appeal.

ARCHITECTURAL ASSOCIATION.—At a meeting of this society, held on the 16th inst. at Lyon's Inn Hall, Strand, Mr. Arthur Allom in the chair, Mr. T. R. Smith read a paper "On the Fine Art Department of the Paris Universal Exhibition, with notes on the mode of Lighting employed there." At the close, some discussion took place, in which the Chairman, Mr. Sayer, Mr. Hayward, and other gentlemen joined.

SOAP.—As every necessary is advancing in price with a prospect of continuance, I feel it to be the duty of every lover of his country, to prevent as far as in his power such an affliction, particularly to the poor. I will not enter into detail, but offer a few remarks on one article, viz. tallow: a large quantity is consumed in the manufacture of soap, and as a considerable quantity of yellow soap is used for the washing of common articles, both linen and woollen, also for scouring and cleansing tables, floors, &c. I have proved the following composition to answer in every respect, full as well as soap for these purposes, viz. Fuller's earth and common soda, prepared as follows:—Dry perfectly by a moderate heat, 7lbs. of Fuller's earth: dissolve 1lb. of soda, in two quarts of water (soft is the best), which pour upon the Fuller's earth: stir them well together, so that they become intimately mixed, and add more water till reduced to a soft paste, so that it may be rubbed smooth with a knife, or ground as colour through a mill. This used in the same proportion as soap, will be found equally efficacious, at one half the cost. Thus our consumption of Russian tallow may be considerably decreased, a further advance in tallow and soap prevented, and our enemy's means for carrying on the war partly frustrated.—AN ENGLISHMAN.

THE LEWISHAM DISTRICT. — THE QUEEN *v.* BADGER.—In this case heard at the Court of Queen's Bench, Westminster, on the 14th inst. the justices of Kent, by an order of sessions, had dismissed a surveyor from his office of surveyor under the Metropolitan Buildings Act (the 7th and 8th Victoria, chap. 84), for receiving a fee to which he was not entitled under the Act. A *certiorari* had issued to bring up the order, and motion was made to quash it, upon the ground that it was bad upon its face, as not showing that the magistrates had jurisdiction. Mr. Pashley, Q.C. Mr. Deedes, and Mr. Rose, showed cause against the rule, which was supported by Mr. Bramwell, Q.C. Mr. Horne, and Mr. F. Russell. The Court took time to consider their decision.

MONUMENT TO MAJOR DALTON. — A crocketted Gothic pinnacle and stem, so to speak, on three steps and a plinth, has been put up in Fillingham Churchyard, to the memory of Major Thomas Dalton, who fell at Inkerman. According to the *Illustrated News*, it was designed and executed by Mr. Keyworth, of Hull.

RAILWAY SLEEPERS AND CHAIRS. — "Wright's Patent Bedplate-tie-sleeper and Vice-jaw Chair Fastening" is one of the modifications of Wright's Patent Continuous Bedplate Sleeper Iron Roadway, which stretches across the way, in one casting, without transverse joints, and is composed of one compound sleeper, two vice-jaws, and four locking bolts, consisting of seven parts. The Bedplate-tie-sleeper is intended to reduce the complication and number of loose parts now existing, and to add more absolute weight to the foundation of the road, to which the rails are secured, at same time dispensing with loose chairs, spikes, and keys, and superseding the punching of holes through the rails, with the application of bolts, &c. The patentee speaks of other advantages in connection with the vice-jaw rail fastening.

CLEANSING TUBULAR DRAINS.—My practice with tubular drains is as follows:—Flushing pipes are brought up to the surface, at convenient distances from each other, and flushed from a hose, and a circular brush is put down the pipe to stir up any sediment that may be deposited on the bottom of the pipes. If this is practised periodically, it will keep the pipes always thoroughly cleansed, and completely obviate the necessity of large tunnels to allow men to travel through them and cleanse by hand. If this system of sweeping the drains and sewers were generally carried out, there could be no danger of any nuisance arising from stoppages in pipes. I find that a gutta percha pipe, with a stiff rope drawn through the bore, with a brush fixed on the end, answers the purpose very well: it can be coiled up in 100 feet lengths, and one man can work a 100 feet brush with great ease.—WILLIAM BURNS.

THE SOUTHAMPTON SHIPWRIGHTS have been unable to obtain the extra 1s. a day, and are now working at their former wages of 5s. a day.

A "WORKING MAN'S COLLEGE" is to be tried at Durham. The instruction is to be given in evening classes. The fee will be all but nominal.

A TOWN-HALL ON FIRE.—At Sheffield, on Tuesday before last, some woodwork adjoining a passage leading to the receiving-office, at the Town-hall, was ignited by a hot-air pipe used in the heating of the building. Part of the woodwork and fittings of a water-closet, behind which the ignited wood was placed, were removed, and the flames extinguished fortunately before much damage was done.

IRON BALANCE-BRIDGES.—The workmen of Mr. Finch's iron foundry, at Chepstow, have just completed the ironwork of one of three balance-bridges, ordered by the Monmouthshire Railway Company, for crossing the canal at Newport. The bridge is supported by four pillars, each 2 tons 15 cwt. of cast-iron, which, with the girders and other appurtenances, of wrought-iron, will make the whole weight nearly 22 tons.

WANTED IN LONDON.—In Mr. John Simon's last Report to the Commission of Sewers for the City of London, just now printed, the writer says,—"In modes to which I have referred so much has been done, or is doing, and the promise of advantage is so great, that it seems almost invidious to point out what remains undone. Yet I hope you will allow me to remind you of one very great intended good, which hitherto exists only in intention. The City of London possesses no public baths, no public laundries, no model dwellings. These institutions which, in their relation to the poor, are beyond most things reformatory and educational, and which seem in a peculiar manner to claim support from the wealth and authority of your great municipal government, have hitherto not made a beginning within the City. But I have reason to believe that many members of the corporation feel a warm interest in their projected establishment, and, without expressing any opinion as to the degree in which such an undertaking belongs to this commission, I do very earnestly hope that, either by your agency, or through some other section of the Corporation, there may soon be bestowed upon the industrious poor of the City, east and west, the incalculable boon of baths and washhouses, and that instead of many a noisome court, and in contrast to the wretched hovels of to-day, there may soon arise some fruitful types of model dwellings, built as beseems the richest municipality in the world, thoughtful for its labouring poor, and seeking to be recorded in the monuments of a wise beneficence."

CASTINGS IN MALLEABLE IRON. — Mr. John Crowley, of York, ironfounder, has patented some improvements in the manufacture of malleable cast iron. The inventor combines chloride of sodium, carbonaceous matter, oxide of manganese, carbonate of lime, and wrought-iron scraps, and the application thereof to the manufacturing of malleable cast iron. ——Mr. J. D. Morries Stirling, who has a process for rendering cast iron tough and malleable, in a communication to the *Birmingham Journal* on the subject, states, in quoting the opinions of Messrs. Eaton Hodgkinson, Owen, Lennie, and others, founded on direct practical experiment, that the strength of his iron is very nearly double that of the average strength of the iron of Great Britain, and *not* one-fourth only or one-fifth, as had been erroneously stated. Mr. Hodgkinson's experiments are said to have proved that in transverse strength, Blaenavon iron bore a test of 1·220 lbs.; Low Moor, 1·207 lbs.; while the toughened iron, with 20 per cent. of malleable scrap, stood a resistance of 2·174 lbs. In tensile strength, the average of sixteen different kinds of iron per square inch was 6·605 tons; Mr. Stirling's, 11·502 tons. Thirdly, in crushing strength per square inch, the average of sixteen different kinds was 38·520 tons; Mr. Stirling's second quality, 54·640 tons.

A STATUE OF THE LATE EARL OF BELFAST has been raised at Belfast, in Ireland. It stands in College-square, and was executed by Mr. Macdowall.

LEVELLING INSTRUMENT.—A levelling instrument, under the title of an inclinometer, was recently patented by Mr. Gillespie, of Edinburgh, and is now manufactured by Messrs. Young, Peddie, and Co. of that city. It is said to be useful for measuring, finding, and adjusting the depth and outfall of drains, water courses, conduits, surface slopes of land, embankments, roads, railway gradients, and in all levelling and sloping operations required in civil engineering. It consists of a rectangular parallelogram, or frame of mahogany or oak, strengthened at the angles with metal plates. On the top is a hinged horizontal bar, mounted with a spirit level, depending from which bar is a vertical arm, graduated, and carrying a plumb line, in such manner that any slope on which the base is placed is represented on the graduated scale at top. It is said to be light and portable. There seems to be much in common between this instrument and one some years since described in our columns, but by whom invented we do not recollect.

SMOKE-CONSUMING FURNACES. — Mr. George Napier, of Glasgow, has recently patented an apparatus for the prevention of smoke from furnaces. It is stated to be of simple construction, and applicable to furnaces now in use. The improvement is effected by means of a retort, heated by the waste gases, through which the cold air, entering by an air-flue, passes, and thereby becomes heated to a high temperature, previous to entering the furnace.

MONUMENT IN CANADA WEST.—A mural monument, designed by Messrs. Smith and Beattie, architects, is being erected in the church of St. Paul, by the citizens of London, Canada West, in memory of the late Colonel Chester, and the men of his regiment, who fell at the Alma. It consists of a trefoil-headed mural panel, surmounted by a crocketted canopy, all of freestone, with a quatrefoil of marble beneath the arch, to bear the inscription. Around the quatrefoil the back of the arch is diapered. It is altogether very creditable.

ANTIQUARIAN DISCOVERIES AT LENTON PRIORY, —In the course of laying down water-pipes in the streets of Old Lenton, several discoveries of considerable interest have been brought to light by Mr. J. Froggatt, of Lenton Poplars, and others taking an interest in archæology, in the vicinity of the once extensive Abbey or Priory of Lenton; of which, besides the shell of the old church, or probably of a separate chapel, there are now only portions of two pillars remaining in a garden. The recent excavations in Old Church-street and along the main street of Old Lenton, as well as along the street specially denominated the Abbey, including an area of many acres, have, however, revealed the great extent of the Abbey grounds, and shown, by the exhumation of the bones of men and animals, of the carved and moulded architectural stones of the former ecclesiastical buildings, such as the volutes of pillars and the mullions of windows, as well as occasionally of a rare old coin, that all traces of the monks are not yet absolutely extinct. Particulars of the recent discoveries are given in the *Notts. Guardian*, at the office of which some of the remains have been exhibited.

TENDERS.

For erecting two chapels, lodge, and boundary walls, at the Hadleigh cemetery. Mr. Edwin G. Pennington, architect. Quantities supplied by Mr. R. D. Bennett:—

H. Luff	£2,350	0	0
W. Barnes	1,997	0	0
Downes and Corder	1,989	15	7
Spooner and Cook	1,791	3	0
E. Gibbons	1,703	0	0
Cornish	1,461	0	0

FOR LODGE AND BOUNDARY WALL.

Downes and Corder	£1,000	0	0
Spooner and Cook	999	9	0
E. Gibbons	862	0	0
W. Barnes	850	0	0

For the Godalming cemetery chapels. Mr. C. H. Howell, architect:—

Russell	£1,204	9	0
W. and T. Smith	1,200	0	0
Henry Moon	1,188	0	0
James Moon and Son	1,150	0	0
James Smith	1,140	0	0
William Othen	1,110	0	0
Carruthers	1,095	0	0
Constable	1,025	0	0
Ellis	998	9	8

For a pair of semi-detached villas at Sydenham, for Messrs. Thorp. Mr. Arthur S Newman, architect. Quantities supplied by Mr. D. Campbell:—

Brown	£2,498	0	0
Payne and Cumming	2,400	18	0
Harnden	2,350	0	0
Wells	2,336	0	0
Wills	2,299	0	0
Snazel	2,146	0	0
Coleman	2,146	0	0